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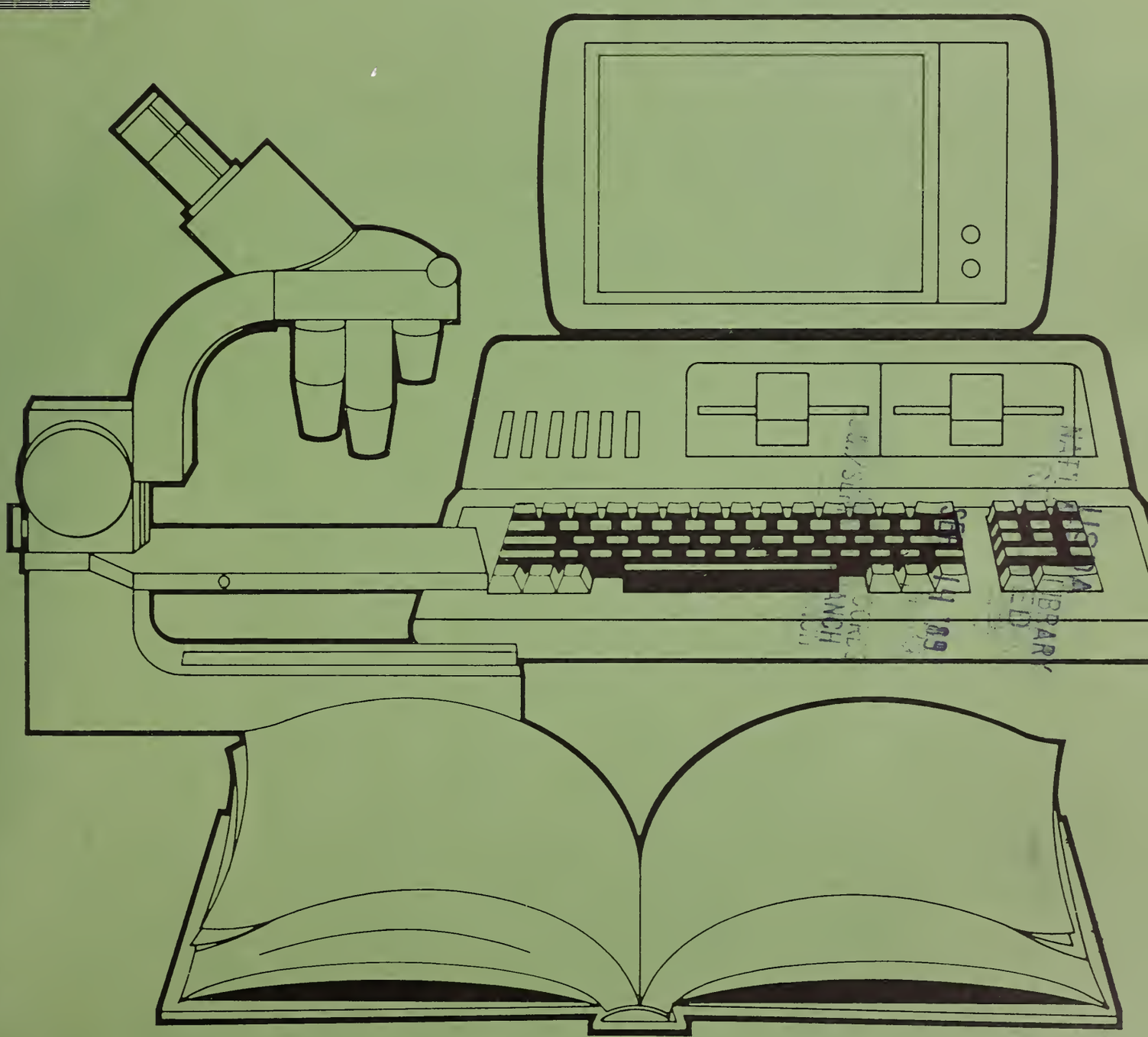

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Compiled and Edited by
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Beltsville, Maryland 20705

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Washington, DC 20460

FOREWORD

This, the 24th bibliography in a jointly sponsored series by EPA and NAL, is an update to BLA-38 which covered the period January 1980 - November 1984.

This close working relationship between the two agencies will produce a series of bibliographies which will be useful to EPA in the regulation of pesticides, as well as to any researcher in the field of plant or commodity protection. The broad scope of information contained in this series will benefit USDA, EPA, and the agricultural community as a whole.

The sources referenced in these bibliographies include the majority of the latest available information from U.S. publications involving commodity protection throughout the growing and processing stages for each agricultural commodity.

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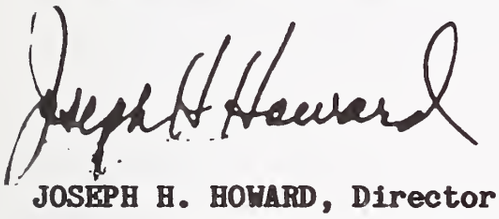

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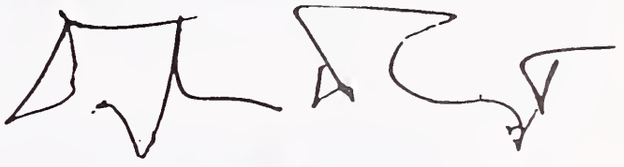

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INTRODUCTION

The citations in this bibliography are selected from works by U.S. and Canadian authors on The Protection of Soybeans, December 1984-February 1989, which updates BLA-38, The Protection of Soybeans, 1980 - November 1984. All citations are derived from AGRICOLA (AGRICultural OnLine Access), the database family compiled by the National Agricultural Library.

This is the 24th bibliography included in a series jointly sponsored by the National Agricultural Library, U.S. Department of Agriculture (USDA-NAL), and the Science Support Branch, Benefits and Use Division, Office of Pesticide Programs, U.S. Environmental Protection Agency (EPA-OPP). Recent volumes in this series include BLA-69, The Protection of Corn, November 1984 - April 1988; BLA-68, The Protection of Root Vegetables; BLA-65, The Protection of Sugarcane and Sugar Beets; BLA-64, Plant Growth Regulators for Higher Plants; and BLA-63, The Protection of Ground and Surface Waters. Plans for the 1988-89 fiscal year include updates for three 1984-85 titles plus seven new titles.

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Effect of temperature on the expression of male sterility in partially male-sterile soybean.
CRPSAY. Carlson, D.R. Williams, C.B. III. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 646-648. Includes 18 references. (NAL Call No.: DNAL 64.8 C883).

0290

Effect of three genes (Pd, Rps1, and ln) on plant height, lodging, and seed yield in indeterminate and determinate near-isogenic lines of soybeans.
CRPSAY. Cooper, R.L. Waranyuwat, A. Madison, Wis. : Crop Science Society of America. Crop science. Jan 1985. v. 25 (1). p. 90-92. Includes 10 references. (NAL Call No.: DNAL 64.8 C883).

0291

Effect of water stress during seedfill on impermeable seed expression in soybean.
CRPSAY. Hill, H.J. West, S.H.; Hinson, K. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 807-812. ill. Includes 17 references. (NAL Call No.: DNAL 64.8 C883).

0292

Effects of continuous cropping of resistant and susceptible cultivars on reproduction potentials of Heterodera glycines and Globodera tabacum solanacearum.
JONEB. Elliott, A.P. Phipps, P.M.; Terrill, R. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 375-379. Includes 23 references. (NAL Call No.: DNAL QL391.N4J62).

0293

Effects of environments, Meloidogyne incognita inoculum levels, and Glycine max genotype on root-knot nematode-soybean interactions in field microplots.
JONEB. Niblack, T.L. Hussey, R.S.; Boerma, H.R. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1986. v. 18 (3). p. 338-346. Includes 22 references. (NAL Call No.: DNAL QL391.N4J62).

0294

Effects of host and density on larval color, size, and development of the velvetbean caterpillar, Anticarsia gemmatalis (Lepidoptera: Noctuidae).
EVETEX. Anazonwu, D.L. Johnson, S.J. College Park, Md. : Entomological Society of America. Environmental entomology. Aug 1986. v. 15 (4). p. 779-783. Includes references. (NAL Call No.: DNAL QL461.E532).

0295

Effects of leaf position, leaf wounding, and plant age of two soybean genotypes on soybean looper (Lepidoptera: Noctuidae) growth.
EVETEX. Reynolds, G.W. Smith, C.M. College Park, Md. : Entomological Society of America. Environmental entomology. Aug 1985. v. 14 (4). p. 475-478. Includes references. (NAL Call No.: DNAL QL461.E532).

0296

Effects of monocropping resistant and susceptible soybean cultivars on cyst nematode infested soil.
CRPSAY. Hartwig, E.E. Young, L.D.; Buehring, N. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 576-579. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Effects of seed color on seed deterioration.
Kueneman, E.A. Costa, A.V. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 71-72. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0298

Efficacy of triapenthenol as a safener against metribuzin injury in soybean (Glycine max) cultivars.
JPGRDI. Vavrina, C.S. Phatak, S.C. New York, N.Y. : Springer. Journal of plant growth regulation. 1988. v. 7 (2). p. 67-75. Includes references. (NAL Call No.: DNAL QK745.J6).

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Evaluation of soybean germplasm for stress tolerance and biological efficiency.
Sapra, V. Tiwari, C.C.; Igbokwe, P.E.; Edung, S.; Russel, L.; Singh, B.T.; Rangappa, M.; Benepal, P.S.; Pacumbaba, R.P.; Dadson, R.B. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1984. v. 11. p. 61-79. (NAL Call No.: DNAL aSB205.S7S6).

0300

Evaluation of soybean germplasm for stress tolerance and biological efficiency.
Kpoghomou, B. Sapra, V.T.; Singh, B.P.; Rangappa, M.; Kraemer, M.E.; Bhagsari, A.; Reddy, M.R.; Pacumbaba, R.P.; Floyd, M. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1986. v. 13. p. 186-197. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0301

Evidence for different genes controlling insect resistance in three soybean genotypes.
CRPSAY. Kilen, T.C. Lambert, L. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 869-871. Includes references. (NAL Call No.: DNAL 64.8 C883).

0302

Evidence of pathogen specificity in tolerance of soybean cultivars to phytophthora rot.
CRPSAY. Thomison, P.R. Thomas, C.A.; Kenworthy, W.J.; McIntosh, M.S. Madison, Wis. : Crop Science Society of America. The recent appearance of new races of the soybean Glycine max (L.) Merr. pathogen Phytophthora megasperma f.sp. glycinea (Pmg) has prompted breeders to consider the use of tolerance as an alternative to race-specific resistance. The

objective of this study was to evaluate the tolerance of cultivars to different isolates and races of Pmg. The tolerance reactions of 'Essex', Williams', 'York', and 'Ware' to isolates of Races 1, 5, 10, and 24 were determined by transplanting 4-d-old seedlings into media infested with Pmg and measuring the effect on plant growth. The reactions indicated that some isolates differ only in virulence and that others differ in pathogenicity. Soybean cultivars selected for tolerance to a limited number of Pmg isolates/races may not necessarily be tolerant to others. Crop science. July/Aug 1988. v. 28 (4). p. 714-715. Includes references. (NAL Call No.: DNAL 64.8 C883).

0303

Expression of a complete soybean leghemoglobin gene in root nodules of transgenic Lotus corniculatus.
PNASA. Stougaard, J. Petersen, T.E.; Marcker, K.A. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Aug 1987. v. 84 (16). p. 5754-5757. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0304

Expression of heat-shock protein genes in cold-stressed soybean plants.
DKBSB. Kimpel, J.A. Kuznetsov, V.V.; Goekjian, G.; Key, J.L. New York, N.Y. : Consultants Bureau. Doklady : botanical sciences - Akademiia nauk SSSR. Translated from: Akademiia nauk SSSR, Doklady, v. 292 (2), 1987, p. 505-507. (511 P444A). Jan/June 1987. v. 292/294. p. 6-8. ill. Includes references. (NAL Call No.: DNAL 511 P444AE).

0305

Fast-growing Rhizobium fredii are poor nitrogen-fixing symbionts of soybean.
CRPSAY. DeTeau, N.M. Palmer, R.G.; Atherly, A.G. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 884-889. Includes references. (NAL Call No.: DNAL 64.8 C883).

0306

A favorable linkage combination in the soybean.
JOHEA. Klien, T.C. Washington, D.C. : American Genetic Association. The Journal of heredity. July/Aug 1986. v. 77 (4). p. 275-277. Includes references. (NAL Call No.: DNAL 442.8 AM3).

0307

Field and greenhouse evaluations of stem canker resistance in soybean.
CRPSAY. Weaver, D.B. Sedhom, S.A.; Smith, E.F.; Backman, P.A. Madison, Wis. : Crop Science Society of America. Greenhouse screening using infested toothpicks was compared to field evaluation of soybean Glycine max (L.) Merr. breeding lines for resistance to stem canker disease, caused by southern strains of Diaporthe phaseolorum (Cke. & Ell. (Sacc.) var. caulivora Athow and Caldwell (Dpc). Field screenings are reliable indicators of resistance, but often the disease does not develop naturally in field screening nurseries. Thirty-seven random F 4:6 lines from the cross 'Hutton' (susceptible) X 'Tracy M' (resistant) were evaluated for their reaction to Dpc in the field (two locations, 2 yr) under natural infestation and infection conditions, and in the greenhouse (three experiments) with artificial inoculation using infested toothpicks. Our objectives were to compare field and greenhouse screening and to determine the usefulness of greenhouse inoculation in predicting the yield and disease reaction of breeding lines when these lines were subjected to natural field infection conditions. Field screening based on symptoms yield was highly effective in identifying resistant genotypes. Heritabilities for yield and disease ratings in the field were 87 and 92%, respectively. The toothpick inoculation procedure used in the greenhouse was effective with each of three Dpc isolates (different in geographic origin from the field location) in identifying the genotypes that showed highest levels of disease resistance in the field. Phenotypic correlations between greenhouse ratings and yield in the infested field ranged from -0.71 to -0.61. Results indicated that selection based on greenhouse screening can be an effective alternative to field screening when resistance is derived from Tracy M. Crop science. July/Aug 1988. v. 28 (4). p. 626-630. Includes references. (NAL Call No.: DNAL 64.8 C883).

0308

Field evaluation of early maturing soybean genotypes for differential adaptation to low night temperatures.
CRPSAY. Seddigh, M. Jolliff, G.D.; Orf, J.H. Madison, Wis. : Crop Science Society of America. Night temperature has a strong effect on soybean Glycine max (L.) Merr. productivity. Successful development of soybean genotypes tolerant to low night temperatures depends on the identification of genetic variation for this trait. Field experiments were conducted at Oregon State University and the University of Minnesota in 1984, 1985, and 1986 to assess genetic variation for adaptation to low night temperature within twenty soybean genotypes of maturity groups (MG) 000,00, and 0 of different origins. All genotypes were grown at Corvallis, OR, and St. Paul, MN, which have mean minimum night temperatures of approximately 10 and 16 degree C, respectively, during the summer months. Mean maximum

temperatures for the same period of the year are similar for the two locations. Both locations are also at about the same latitude (ca. 45 degree N). Indices for adaptation to cool nights were calculated for seed yield, above ground dry matter (excluding leaves), apparent harvest index, seed weight, and days to maturity. These indices were calculated based on the performance of each genotype for a given trait in Corvallis relative to the mean performance of all genotypes within the same maturity group in Corvallis, as compared to the same value calculated for St. Paul. Genetic variations for adaptation to cool nights were identified for all the traits under investigation. In terms of seed yield, 'Fiskeby V' (MG 000), 'Caloria' and 'McCall' (MG 00), and 'Dawson' and 'Evans' (MG0) appeared to be most adapted to low night temperatures, while 'Maple Presto' (MG 000), 'Heike 3' and 'Maple Arrow' (MG 00), and PI 290119 and 'Ozzie' (MG 0) seemed to be least adapted to cool nights. It also appeared that different characteristics contributed to the differential adaptation of genotypes to cool nights for seed yield. This information should be useful in breeding programs to develop soybean cultivars less sensitive to variations in night temperature. Crop science. July/Aug 1988. v. 28 (4). p. 639-643. Includes references. (NAL Call No.: DNAL 64.8 C883).

0309

A field study of moisture content of soybean pods and seeds after harvest maturity.
JSTED. Yaklich, R.W. Cregan, P.B. East Lansing, Mich. : Association of Official Seed Analysts. Journal of seed technology. 1987. v. 11 (1). p. 62-68. Includes references. (NAL Call No.: DNAL SB113.2.J6).

0310

Fighting Phytophthora.
Ullery, J. Wooster, Ohio : The Service. Ohio 21 - College of Agriculture, Ohio Cooperative Extension Service, Ohio Agricultural Research and Development Center, Ohio State University. Mar 1988. v. 2 (1). p. 20-21. ill. (NAL Call No.: DNAL S541.5.O3O54).

0311

Florida soybean variety trials, 1981-1983.
Hiebsch, C.K. (coord. and ed.). Peacock, H.A. (coop.); Kinlock, R.A. (coop.); Gorbet, D.W. (coop.); Barnett, R.D. (coop.); Hinson, K. (coop.); Scudder, W.T. (coop.); Spelbring, M.C. (coop.); Martin, W.C. (coop.); Shokes, F.M. (coop.). Gainesville, Fla. : The Station. Agronomy research report AY - Agricultural Experiment Stations, University of Florida. Includes statistical data. June 1984. (84-11). 24 p. maps. (NAL Call No.: DNAL S540.A2F62).

0312

Foliar sensitivity of soybeans from early maturity groups to ozone and inheritance of injury response.
PLDRA. Damicone, J.P. Manning, W.J.; Herbert, S.J.; Feder, W.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Apr 1987. v. 71 (4). p. 332-336. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0313

Fungi and insect damage to soybean seeds harvested at immature stages in tropical environments.
JAUPA. Ortiz, C. Rodriguez de Cianzio, S.; Hepperly, P.R. Mayaguez : University of Puerto Rico, Agricultural Experiment Station. The Journal of agriculture of the University of Puerto Rico.. Jan 1988. v. 72 (1). p. 73-79. Includes references. (NAL Call No.: DNAL 8 P832J).

0314

Gene introduction to induce morphogenesis.
HJHSA. Owens, L.D. Cohen, J.D.; Seelke, R. Alexandria, Va. : American Society for Horticultural Science. HortScience. Paper presented at the "Symposium on Regulation in Morphogenesis of the XXII International Horticultural Congress/83rd ASHS Annual Meeting," August 15, 1986, Davis, California.~ Literature review. June 1988. v. 23 (3). p. 520-525. ill. Includes references. (NAL Call No.: DNAL SB1.H6).

0315

Genetic analysis of a null-allele for lipoxygenase-2 in soybean.
CRPSAY. Davies, C.S. Nielsen, N.C. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 460-463. Includes 11 references. (NAL Call No.: DNAL 64.8 C883).

0316

Genetic relationships among soybean plant introductions for resistance to Race 3 of soybean cyst nematode.
CRPSAY. Rao-Arelli, A.P. Anand, S.C. Madison, Wis. : Crop Science Society of America. Soybean cyst nematode (SCN), Heterodera glycines Ichinohe, is a major pest of soybean, Glycine max L. Merr. Several plant introductions resistant to Race 3 have been identified, however the genetic relationships for resistance among them are not known. The F2 plants and F3 families from seven different crosses involving resistant parents were evaluated in the greenhouse to determine if the genes for resistance were identical or different from the genes in 'Peking' and/or PI

90763. Each seedling was inoculated with 1000 eggs and juveniles of SCN Race 3. Plant roots were washed after 30 d and white females enumerated. Based on the index of parasitism (IP) F2 plants and F3 families were categorized into resistant, segregating, or susceptible. The Chi-square test was applied to determine goodness of fit between the observed and expected genetic ratios. Peking was found to have genes in common with PI 90763 and PI 438489B; whereas PI 90763 has genes in common with PI 438489B, PI 404166, and PI 404198A. The cross between Peking and PI 88788 indicated segregation for one dominant and one recessive gene, and segregation in the cross PI 88788 X PI 438496B suggested two independent dominant genes. This information will assist soybean breeders in choosing additional resistant sources to SCN Race 3 in commercial cultivar development, thus providing a broader genetic base. Crop science. July/Aug 1988. v. 28 (4). p. 650-652. Includes references. (NAL Call No.: DNAL 64.8 C883).

0317

Genetics of reaction to soybean mosaic virus (SMV) in cultivars exhibiting differential reaction to SMV strains.
Buss, G.R. Chen, P.; Roane, C.W.; Tolin, S.A. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 258-259. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0318

Growth and development of soybean plants under prolonged influence of low temperature.
Sichkar, V.I. Ames, Iowa : The Service. Soybean genetics newsletter - United States Department of Agriculture, Agricultural Research Service. Apr 1988. v. 15. p. 191-194. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0319

Heat stress: expression and structure of heat shock protein genes.
NASSD. Key, J.L. Nagao, R.T.; Czarnecka, E.; Gurley, W.B. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Plant molecular biology / edited by D. Von Wettstein and N.H. Chua. Proceedings of a NATO Advanced Study Institute, June 10-19, 1987, Copenhagen, Denmark.~ Literature review. 1987. v. 140. p. 385-397. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

0320

Heritability of tolerance to soybean cyst nematode in soybean.
CRPSAY. Reese, P.F. Jr. Boerma, H.R.; Hussey, R.S. Madison, Wis. : Crop Science Society of America. Tolerance to Heterodera glycines Ichinohe, soybean cyst nematode (SCN), has recently been identified as an additional control strategy to limit yield losses in soybean, Glycine max (L.) Merr. Heritability estimates are necessaryfor determining breeding strategies to increase tolerance to SCN. The objectivesof this study were to determine the heritability of tolerance in three soybean crosses and determine the degree of association between tolerance and seed yield in untreated and nematicide-treated plots. A tolerance index (TI) was calculatedusing the formula: (seed yield of untreated subplot divided seed yield of nematicide-treated subplot) X 100. Fifty-four F2-derived lines in the F4 and F5 generations and parents were evalua ted for TI in SCN-infested soil for 2 yr at two locations. The Athens, GA location was infested with SCN Race 3 and Waynesboro, GA with SCN Race 4. Heritabilityfor TI average 19% based on variance component estimates (three replications and two locations) and 26% for realized estimates (selection of top 11% of lines based on two-location means). There was a positive association between TI and seed yield in untreated subplots (r=0.78 to 0.90), but there was an inconsistent association between TI and seed yield in nematicide-treated subplots. The variance component estimates of heritability for seed yield in untreated subplots averaged 31% (three replications and two locations). These results indicated that susceptible genotypes can be evalu ated for seed yield without nematicides in SCN-infested soil in the early phasesof a breeding program to increase tolerance. Crop science. July/Aug 1988. v. 28 (4). p. 594-598. Includes references. (NAL Call No.: DNAL 64.8 C883).

0321

Host range and compatibility of soybean with rhizobial microsymbionts.
Devine, T.E. Boulder, Colo. : Westview Press, 1985. World Soybean Research Conference III : proceedings / edited by Richard Shibles. Literature review. p. 484-492. Includes references. (NAL Call No.: DNAL SB205.S7W6 1984).

0322

Identification and utilization of variation in herbicide tolerance in soybean (Glycine max) breeding.
WEESA6. Hartwig, E.E. Champaign, Ill. : Weed Science Society of America. Weed science. Paper presented at the "Symposium on Genetic Engineering for Herbicide Resistance," Feb. 1985. 1987. v. 35 (Suppl.1). p. 4-8. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0323

Identification of single genes controlling resistance to stem canker in soybean.
CRPSAY. Kilen, T.C. Hartwig, E.E. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 863-864. Includes references. (NAL Call No.: DNAL 64.8 C883).

0324

Indeterminate and determinate soybean responses to planting date.
AGJOAT. Wilcox, J.R. Frankenberger, E.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1987. v. 79 (6). p. 1074-1078. Includes references. (NAL Call No.: DNAL 4 AM34P).

0325

Induction of Bradyrhizobium japonicum common nod genes by isoflavones isolated from Glycine max.
PNASA. Kosslak, R.M. Bookland, R.; Barkei, J.; Paaren, H.E.; Appelbaum, E.R. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Nov 1987. v. 84 (21). p. 7428-7432. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0326

Influence of cultivar and seed characteristics on vertical weight displacement by soybean seedlings.
CRPSAY. Howle, D.S. Caviness, C.E. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 321-324. Includes references. (NAL Call No.: DNAL 64.8 C883).

0327

Influence of three soybean genotypes on development of Voria ruralis (Diptera: Tachinidae) and on foliage consumption by its host, the soybean looper (Lepidoptera: Noctuidae).
FETMA. Grant, J.F. Shepard, M. Gainesville, Fla. : Florida Entomological Society. Florida entomologist. Dec 1985. v. 68 (4). p. 672-677. Includes references. (NAL Call No.: DNAL 420 F662).

0328

Influence of weed control treatments on soybean cultivars in an oat-soybean rotation.
AGJOAT. Burnside, O.C. Moomaw, R.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1984. v. 76 (6). p. 887-890. Includes 13 references. (NAL Call No.: DNAL 4 AM34P).

0329

Inheritance of an ethyl methanesulfonate-induced dwarf in soybean and analysis of leaf cell size.
CRPSAY. Werner, B.K. Wilcox, J.R.; Housley, T.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1987. v. 27 (4). p. 665-668. Includes references. (NAL Call No.: DNAL 64.8 C883).

0330

Inheritance of chlorimuron ethyl sensitivity in the soybean strains BSR 101 and M74-462.
CRPSAY. Pomeranke, G.J. Nickell, C.D. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1988. v. 28 (1). p. 59-60. Includes references. (NAL Call No.: DNAL 64.8 C883).

0331

Inheritance of double nulls for protein components of soybean seed.
CRPSAY. Prischmann, J.A. Hymowitz, T. Madison, Wis. : Crop Science Society of America. The objective of this study was to determine whether it was possible to develop in soybean G. max (L.) Merr. seeds double null genotypes for the Kunitz trypsin inhibitor (ti) null in reciprocal combinations with genotypes lacking lectin (le), lipoxygenase-1, (lX1), beta-amylase (sp1), and urease Eu1-sun). Homozygous double recessive soybean lines were obtained for all eight combinations. From F2 data collected using colorimetric, immunological, and electrophoretic tests, we demonstrated that the Kunitz trypsin inhibitor locus segregated independently of the lectin, lipoxygenase-1, urease and beta-amylase loci. Crop science. Nov/Dec 1988. v. 28 (6). p. 1010-1012. Includes references. (NAL Call No.: DNAL 64.8 C883).

0332

Inheritance of resistance to Phytophthora megasperma f. sp. glycinea in the soybean PI 92.718-2.
Moots, C. Nickell, C.D. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 243-247. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0333

Insecticide toxicity to the soybean looper and the velvetbean caterpillar (Lepidoptera: Noctuidae) as influenced by feeding on resistant soybean (PI 227687) leaves and coumestrol.
JEENAI. Rose, R.L. Sparks, T.C.; Smith, C.M. College Park, Md. : Entomological Society of America. Permethrin, fenvalerate, acephate, methyl parathion, and methomyl were tested on larvae of the velvetbean caterpillar, Anticarsia gemmatalis (Hubner), and the soybean looper, Pseudoplasia includens (Walker), fed on a susceptible ('Bragg') or a resistant (PI 227687) soybean cultivar. At LD50, susceptibility of A. gemmatalis larvae to fenvalerate and acephate was significantly enhanced by feeding on the resistant cultivar (1.5 and 1.6 times, respectively). P. includens reared on resistant leaves were also significantly more susceptible to acephate (2 times) than when they were reared on susceptible leaves. The toxicity of the other insecticides examined for each insect was not affected. Incorporation of coumestrol, an isoflavonoid associated with PI 227687 resistance, into a modified artificial diet resulted in significant reductions in weight gain for P. includens larvae. Feeding on a diet amended with coumestrol significantly enhanced the toxicity of fenvalerate (1.5 times) while reducing toxicity of methomyl (2 times) to larvae of P. includens. Journal of economic entomology. Oct 1988. v. 81 (5). p. 1288-1294. Includes references. (NAL Call No.: DNAL 421 J822).

0334

Interactions between soybean (Glycine max) cultivars and selected weeds.
WEESA6. Monks, D.W. Oliver, L.R. Champaign, Ill. : Weed Science Society of America. Competition of weeds was characterized by determining the distance down the soybean row that a weed affects soybean biomass and yield. Field studies were conducted for 2 yr to compare competitive effects of common cocklebur, johnsongrass, Palmer amaranth, sicklepod, and tall morningglory on 'Forrest' and 'Centennial' soybeans. The weeds did not significantly reduce soybean biomass for 6 weeds after emergence. Palmer amaranth, common cocklebur, and tall morningglory had the greatest biomass by 6 weeks after emergence. However, only competition from common cocklebur and Palmer amaranth measurably reduced soybean biomass during the growing season. Biomass of Forrest and Centennial soybeans was reduced when these cultivars were growing within 12.5 and 50 cm of common cocklebur, respectively. Johnsongrass, sicklepod, and tall morningglory grew more slowly than the other weeds and no measurable competitve effects on soybean biomass. Soybean competition reduced biomass of all weeds 90 to 97%. Soybean cultivar influenced the level and duration of competitiveness depending on the weed species present. Biomass of both soybean cultivars was reduced when they were growing within 50 cm of Palmer amaranth. Soybean seed yield was reduced when soybeans were growing within 25 cm of common cocklebur and Palmer amaranth and also when they were growing within 12.5 cm of tall morningglory. Sicklepod had no effect on soybean seed yield. Weed science. Nov 1988. v. 36 (6). p. 770-774. Includes references. (NAL Call No.: DNAL 79.8 W41).

0335

Interactions of selected Glycine soja Sieb. and Zucc. genotypes with fast- and slow-growing soybean rhizobia.
CRPSAY. Keyser, H.H. Cregan, P.B. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1059-1062. Includes 22 references. (NAL Call No.: DNAL 64.8 C883).

0336

Isolation and initial characterization of constitutive nitrate reductase-deficient mutants NR328 and NR345 of soybean (Glycine max).
PLPHA. Carroll, B.J. Gresshoff, P.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 572-576. Includes 29 references. (NAL Call No.: DNAL 450 P692).

0337

Isolation and properties of soybean Glycine max (L.) Merr. mutants that nodulate in the presence of high nitrate concentrations.
PNASA. Carroll, B.J. McNeil, D.L.; Gresshoff, P.M. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. June 1985. v. 82 (12). p. 4162-4166. ill. Includes 32 references. (NAL Call No.: DNAL 500 N21P).

0338

Johnsongrass (Sorghum halepense) control and soil moisture relationships in no-tillage, doublecropped soybeans (Glycine max).
WEESA6. Defelice, M.S. Witt, W.W.; Martin, J.R. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1987. v. 35 (1). p. 108-114. Includes references. (NAL Call No.: DNAL 79.8 W41).

0339

Light shock in soybean plantlets?.
Olivieri, A.M. Lucchin, M.; Parrini, P.; Marchetti, S.; Vischi, M. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 103-104. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0340

Linkage tests with a locus conditioning ineffective nodulation response to Rhizobium fredii.
Griffin, J.D. Du Teau, N.M.; Palmer, R.G.; Atherly, A.G. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1986. v. 13. p. 145-146. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0341

Lloyd: A new disease resistant soybean cultivar for Arkansas.
AKFRAC. Caviness, C.E. Riggs, R.D.; Rupe, J.C. Fayetteville, Ark. : The Station. Arkansas farm research - Arkansas Agricultural Experiment Station. Jan/Feb 1988. v. 37 (1). p. 10. (NAL Call No.: DNAL 100 AR42F).

0342

Male sterility in soybean (Glycine max). I. Phenotypic expression of the ms2 mutant.
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CRPSAY. Boerma, H.R. Hussey, R.S.; Phillips, D.V.; Wood, E.D. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 375. Includes references. (NAL Call No.: DNAL 64.8 C883).

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CRPSAY. Bernard, R.L. Cremeens, C.R. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1988. v. 28 (6). p. 1027. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Relationship of tissue water relations to asparagine uptake in developing soybean seeds.
CRPSAY. Guldan, S.J. Brun, W.A. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1987. v. 27 (4). p. 720-725. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Response of current Midwestern soybean cultivars to late planting.
CRPSAY. Raymer, P.L. Bernard, R.L. Madison, Wis. : Crop Science Society of America. Soybean Glycine max (L.) Merr. is grown in the Midwestern USA primarily as a full-season crop and only to a limited extent as a double crop following small grains. Development of cultivars specifically adapted to later planting dates commonly associated with double-crop production has been suggested as a means to expand double-crop hectarage in this area. To determine if currently used soybean cultivars differ in their adaptation to late planting and if any specific plant traits are related to improved performance under late-planted conditions, 16 soybean cultivars were evaluated at both conventional (May) and late (late June to early July) planting dates in 1979, 1980, and 1981. Cultivar by planting date interactions were found for days to maturity, height at maturity, seed quality, and seed mottling, but not for yield, days to flowering, height at flowering, lodging, and weight per 100 seeds. All cultivars suffered substantial and similar yield reductions when planted late. Phenotypic correlation coefficients of cultivar performance between the two planting dates were positive and highly significant for all plant traits measured. The relationship of yield with various plant traits varied greatly from year to year and no differences in these relationships were observed between the two planting dates. These results do not furnish any evidence to justify a separate breeding program for the development of double-crop cultivars adapted to the Midwest. The lack of a strong cultivar by planting date interaction for yield and the lack of any strong associations of specific plant characteristics with yield in a late-planted environment imply that testing in a conventional early-planted environment will be effective in identifying lines that perform well in either full-season or double-crop environments. Crop science. Sept/Oct 1988. v. 28 (5). p. 761-764. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Seed treatment for control of iron-deficiency chlorosis of soybean.
CRPSAY. Karkosh, A.E. Walker, A.K.; Simmons, J.J. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 369-370. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Sherepitko, V.V. Sichkar, V.I. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 300-307. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

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CRPSAY. Piper, T.E. Fehr, W.R.; Voss, B.K. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 751-752. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Structural changes associated with resistance of soybean to Heterodera glycines.
JONEB. Kim, Y.H. Riggs, R.D.; Kim, K.S. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1987. v. 19 (2). p. 177-187. ill. Includes references. (NAL Call No.: DNAL QL391.N4J62).

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Symbiotic effectiveness and host-strain interactions of Rhizobium fredii USDA 191 on different soybean cultivars.
APMBA. Israel, D.W. Mathis, J.N.; Barbour, W.M.; Elkan, G.H. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. May 1986. v. 51 (5). p. 898-903. Includes 25 references. (NAL Call No.: DNAL 448.3 AP5).

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Temperature effects upon the expression of a high oleic acid trait in soybean.
JJASDH. Martin, B.A. Wilson, R.F.; Rinne, R.W. Champaign, Ill. : The Society. Journal of the American Oil Chemists' Society. Mar 1986. v. 63 (3). p. 346-352. Includes 22 references. (NAL Call No.: DNAL 307.8 J82).

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JEENAI. Hildebrand, D.F. Rodriguez, J.G.; Brown, G.C.; Volden, C.S. College Park, Md. : Entomological Society of America. Journal of economic entomology. Aug 1986. v. 79 (4). p. 915-921. Includes references. (NAL Call No.: DNAL 421 J822).

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AGJOAT. Clawson, K.L. Specht, J.E.; Blad, B.L.; Garay, A.F. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1986. v. 78 (3). p. 483-487. Includes references. (NAL Call No.: DNAL 4 AM34P).

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CRPSAY. Salado-Navarro, L.R. Sinclair, T.R.; Hinson, K. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 966-970. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Yield and reproductive growth of simulated and field-grown soybean. II. Dry matter allocation and seed growth rates.
CRPSAY. Salado-Navarro, L.R. Sinclair, T.R.; Hinson, K. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 971-975. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Yield reductions caused by stem canker in soybean.
CRPSAY. Harville, B.G. Berggren, G.T.; Snow, J.P.; Whitnam, H.K. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 614-616. Includes 8 references. (NAL Call No.: DNAL 64.8 C883).

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1984 soybean variety trials.
Mississippi State, Miss. : The Station. MAFES research highlights - Mississippi Agricultural & Forestry Experiment Station. Jan 1985. v. 48 (1). p. 6-8. (NAL Call No.: DNAL 100 M69MI).

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Preplant tillage effects on population dynamics of soybean insect predators.
CRPSAY. Funderburk, J.E. Wright, D.L.; Teare, I.D. Madison, Wis. : Crop Science Society of America. Tillage operations modify soil habitats where many pests and their natural enemies reside at least during part of their life cycle. Bigeyed bugs (Geocoris spp.) and damsel bugs (Nabis and Reduviolus spp.) are common beneficial polyphagous insect predators in many crops. The objective of this research was to measure effects of tillage on population cycles and population size of those predators to aid in development of cultural IPM (integrated pest management) strategies for biological control of insect pests in soybean Glycine max (L.) Merr. double cropped with wheat (Triticum aestivum L.). The four tillage regimes used were no tillage and disk tillage with and without in-row subsoiling. Bigeyed bug nymphal and adult population cycles were similar for each tillage/subsoiling treatment. There were differences between years because in 1986 there was considerable overlap of generations, which was not observed in 1985. Disk tillage treatments had higher bigeyed bug nymphal and adult populations than the no tillage treatments in 1985 and 1986, but subsoiling did not influence population size. Damsel bug population cycles were also similar for all tillage/subsoiling treatments in both years. In 1985, populations of adult and nymphal damsel bugs were lower for no tillage without subsoiling than for disk tillage without subsoiling, disk tillage with subsoiling, or no tillage with subsoiling. Population sizes were similar for all treatments in 1986. Crop science. Nov/Dec 1988. v. 28 (6). p. 973-977. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Wongyai, W. Furuya, T.; Matsumoto, S. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1984. v. 11. p. 49-52. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

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PPGGD. Riedell, W.E. Khoo, U.; Inglett, G.E. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1985. (12th). p. 204-212. ill. Includes references. (NAL Call No.: DNAL SB128.P5).

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The effects of lethal heat shock on nonadapted and thermotolerant root cells of Glycine max.
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Immunocytolocalization of extensin in developing soybean seed coats by immunogold-silver staining and by tissue printing on nitrocellulose paper.
JCLBA3. Cassab, G.I. Varner, J.E. New York, N.Y. : Rockefeller University Press. The Journal of cell biology. Dec 1987. v. 105 (6, pt.1). p. 2581-2588. ill. Includes references. (NAL Call No.: DNAL 442.8 J828).

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Lateral diffusion of phospholipids in the plasma membrane of soybean protoplasts: evidence for membrane lipid domains.
PNASA. Metcalf, T.N. III. Wang, J.L.; Schindler, M. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Jan 1986. v. 83 (1). p. 95-99. ill. Includes 38 references. (NAL Call No.: DNAL 500 N21P).

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Male sterility in soybean (Glycine max). I. Phenotypic expression of the ms2 mutant.
AJBOA. Graybosch, R.A. Palmer, R.G. Baltimore, Md. : Botanical Society of America. American journal of botany. Nov 1985. v. 72 (11). p. 1738-1750. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Physiological-pathological interactions affecting seed deterioration : proceedings of a symposium / sponsored by Divisions C-4 and C-2 of the Crop Science Society of America in Chicago, IL, 3 Dec. 1985 ; editor, S.H. West. p. 1-10. ill. Includes references. (NAL Call No.: DNAL SB118.38.P48).

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CRPSAY. Yaklich, R.W. Vigil, E.L.; Wergin, W.P. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 616-624. ill. Includes 19 references. (NAL Call No.: DNAL 64.8 C883).

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Regulation of plant morphology by growth retardants. Effects of phytohormone levels in soybean seedlings determined by immunoassay.
PLPHA. Grossmann, K. Kwiatkowski, J.; Siebecker, H.; Jung, J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1987. v. 84 (4). p. 1018-1021. Includes references. (NAL Call No.: DNAL 450 P692).

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Seed physiology, production, & technology.
CRPSAY. McDonald, M.B. Jr. Vertucci, C.W.; Roos, E.E. Madison, Wis. : Crop Science Society of America. Soybean Glycine max (L.) Merr. seeds are prone to imbibitional injury, which may culminate in significant economic losses. This study was designed to investigate the regulation of soybean seed imbibition by the seed coat. The intact seed coat delayed water uptake in the embryonic axis, cotyledons, and whole seed during the first 8 h soaking. The seed coat also assisted in tangential as well as radial displacement of water to the embryo. Scanning electron micrographs revealed a seed coat-derived radicle pocket surrounding the radicle tip as well as hourglass cells in the seed coat, which decreased in size away from the hilum. The function of the radicle pocket and hour glass cells of the seed coat may be associated with water storage surrounding the embryonic axis. This is substantiated by the large water-holding capacity of the seed coat compared to its fresh weight. Isolated seed coats absorbed 3.8 times their fresh weight in water. These studies ascribe a significant role to the seed coat in regulating embryo moisture uptake. Initially, the seed coat retards water uptake and/or governs the direction of water penetration to the embryo and eventually serves as a reservoir of water for the hydrating axis. Crop science. Nov/Dec 1988. v. 28 (6). p. 987-992. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Ultrastructural effects of glyphosate on Glycine max seedlings.
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Acetate kinase activity in Bradyrhizobium japonicum bacteroids.
Preston, G.G. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia. 1987. v. 6. p. 160. Includes references. (NAL Call No.: DNAL QK861.P55).

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Aluminum and pH limitations for germination and radicle growth of soybean.
JPNUDS. Suthipradit, S. Alva, A.K. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1986. v. 9 (1). p. 67-73. Includes references. (NAL Call No.: DNAL QK867.J67).

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PLPHA. VerNooy, C.D. Lin, W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 8-11. Includes 15 references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Sarath, G. Pfeiffer, N.E.; Sodhi, C.S.; Wagner, F.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1986. v. 82 (2). p. 346-350. Includes references. (NAL Call No.: DNAL 450 P692).

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RAPHB. Mulchi, C.L. Bell, P.F.; Adamu, C.; Heckman, J.R. New York, N.Y. : Plenum Press. Recent advances in phytochemistry. In the series analytic: Phytochemical effects of environmental compounds / edited by J.A. Saunders, L. Kosak-Channing and E.E. Conn. 1987. v. 21. p. 235-259. Includes references. (NAL Call No.: DNAL QK865.A1R4).

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Wagner, F.W. Sarath, G. Rockville, Md. : American Society of Plant Physiologists, c1987. Plant senescence : its biochemistry and physiology / edited by William W. Thomson, Eugene A. Nothnagel, and Ray C. Huffaker. p. 190-197. Includes references. (NAL Call No.: DNAL QK710.S9 1987).

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Calcium-calmodulin requirements of phosphatidyl inositol turnover stimulated by auxin.
NASSD. Sandelius, A.S. Morre, D.J. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. Paper presented at the workshop on "Molecular and Cellular Aspects of Calcium in Plant Development," July 15-19, 1985, Edinburgh, Scotland. 1985. v. 104. p. 351-352. Includes references. (NAL Call No.: DNAL QH301.N32).

0433

Carbohydrate, organic acid, and amino acid composition of bacteroids and cytosol from soybean nodules.
PLPHA. Streeter, J.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1987. v. 85 (3). p. 768-773. Includes references. (NAL Call No.: DNAL 450 P692).

0434

Carbohydrate supply and N2 fixation in soybean. The effect of varied daylength and stem girdling.
PLPHA. Walsh, K.B. Vessey, J.K.; Layzell, D.B. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1987. v. 85 (1). p. 137-144. Includes references. (NAL Call No.: DNAL 450 P692).

0435

Cessation of assimilate uptake in maturing soybean seeds.
PLPHA. VerNooy, C.D. Thorne, J.H.; Lin, W.; Rainbird, R.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1986. v. 82 (1). p. 222-225. Includes 19 references. (NAL Call No.: DNAL 450 P692).

0436

Characterization of root hair cell walls as potential barriers to the infection of plants by rhizobia. The carbohydrate component.
PLPHA. Mort, A.J. Grover, P.B. Jr. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1988. v. 86 (2). p. 638-641. Includes references. (NAL Call No.: DNAL 450 P692).

0437

Comparative evaluation of factors involved in Fe stress response in tomato and soybean.
JPNUDS. Camp, S.D. Jolley, V.D.; Brown, J.C. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Mar 1987. v. 10 (4). p. 423-442. Includes references. (NAL Call No.: DNAL QK867.J67).

0438

Compatible and incompatible rhizobia alter membrane potentials of soybean root cells.
PLPHA. Ersek, T. Novacky, A.; Pueppke, S.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1986. v. 82 (4). p. 1115-1118. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0439

Competitiveness of selected Bradyrhizobium japonicum strains in midwestern USA soils.
SSSJD4. Klubek, B.P. Hendrickson, L.L.; Zablotowicz, R.M.; Skwara, J.E.; Varsa, E.C.; Smith, S.; Islieb, T.G.; Maya, J.; Valdes, M.; Dazzo, F.B. Madison, Wis. : The Society. The competitiveness of 19 selected Bradyrhizobium japonicum strains in the midwestern USA was evaluated in field studies during 1984 and 1985. Of the 11 selected strains evaluated in 1984, a range in nodule occupancy of 0.3 to 15.7% was observed across three locations in Illinois and Wisconsin. During the second year of the study, 7 of 12 strains showed nodule occupancy averaging between 14.8 to 26.6% for eight locations in Illinois, Michigan, South Dakota, and Wisconsin. Strain An-11 exhibited an average nodule occupancy of 15.7% in 1984 and 26.6% in 1985 which was significantly greater than any of the other 18 strains tested. Estimates of biologically-fixed N via non-nodulating isolines of soybean (Glycine max L.) showed a significant diffference between one inoculum treatment (strain An-14) and the noninoculated control for only one location (Plainfield, WI) during the second year of the study. No significant differences in grain yield were observed in either year of the study. The data suggests that selected strains of B. japonicum can be more successfully introduced into midwestern USA soils if they are adapted for the soils and cultivars in that geographic region. Soil Science Society of America journal. May/June 1988. v. 52 (3). p. 662-666. Includes references. (NAL Call No.: DNAL 56.9 S03).

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Developmental effects on micronutrient distribution in mycorrhizal and P-fertilized soybeans.
Pacovsky, R.S. Fuller, G.; Paul, E.A. Corvallis, Or. : Oregon State University , Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 373. (NAL Call No.: DNAL aQK604.N6 1984).

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Differential nodulation of soybean cultivars in the presence of Hoplolaimus columbus.
Weiser, G.C. Mueller, J.D.; Shipe, E.R. Ames, Iowa : The Service. Soybean genetics newsletter - United States Department of Agriculture, Agricultural Research Service. Apr 1988. v. 15. p. 121-123. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

0442

Diurnal and seasonal variation in dinitrogen fixation (acetylene reduction) rates by field-grown soybeans.
AGJOAT. Denison, R.F. Sinclair, T.R. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1985. v. 77 (5). p. 679-684. Includes references. (NAL Call No.: DNAL 4 AM34P).

0443

Effect of cheese whey as a fertilizer on the increase of soybean nodules.
Konar, A. Arioglu, H. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 139-143. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

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Effect of fungicide application on soybean-rhizobia symbiosis and isolation of fungicide-resistant strains of Rhizobia japonicum.
BECTA. Tesfai, K. Mallik, M.A.B. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. June 1986. v. 36 (6). p. 819-826. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

0445

Effect of lectin on nodulation by wild-type Bradyrhizobium japonicum and a nodulation-defective mutant.
APMBA. Halverson, L.J. Stacey, G. Washington, D.C. : American Society for Microbiology. Applied and environmental microbiology. Apr 1986. . v. 51 (4). p. 753-760. Includes 31 references. (NAL Call No.: DNAL 448.3 AP5).

0446

Effect of lime rates on nutrient availability, mobility, and uptake during the soybean-growing season. 1. Aluminum, manganese and phosphorus.
SOSCAK. Martini, J.A. Mutters, R.G. Baltimore, Md. : Williams & Wilkins. Soil science. Mar 1985. v. 139 (3). p. 219-226. ill. Includes 12 references. (NAL Call No.: DNAL 56.8 S03).

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Effect of lime rates on nutrient availability, mobility, and uptake during the soybean growing season. 2. Calcium, magnesium, potassium, iron, copper, and zinc.
SOSCAK. Martini, J.A. Mutters, R.G. Baltimore, Md. : Williams & Wilkins. Soil science. Apr 1985. v. 139 (4). p. 233-243. Includes 11 references. (NAL Call No.: DNAL 56.8 S03).

0448

Effect of liming and fertilization on sulfur availability, mobility, and uptake in cultivated soils of South Carolina.
SOSCAK. Martini, J.A. Mutters, R.G. Baltimore, Md. : Williams & Wilkins. Soil science. Dec 1984. v. 138 (6). p. 403-410. Includes references. (NAL Call No.: DNAL 56.8 S03).

0449

Effect of localized nitrogen availability to soybean half-root systems on photosynthate partitioning to roots and nodules.
PLPHA. Singleton, P.W. Van Kessel, C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1987. v. 83 (3). p. 552-556. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0450

Effect of petiole phloem disruption on starch and mineral distribution in senescing soybean leaves.
AJBOA. Wood, L.J. Murray, B.J.; Okatan, Y.; Nooden, L.D. Baltimore, Md. : Botanical Society of America. American journal of botany. Oct 1986. v. 73 (10). p. 1377-1383. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Effect of phosphorus, nitrogen fertilization and foliar applied manganese on yield and nutrient concentration of soybean.
CSOSA2. Soliman, M.F. Farah, M.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Apr 1985. v. 16 (4). p. 361-374. Includes 21 references. (NAL Call No.: DNAL S590.C63).

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Effect of planting date and growth stage on secondary and micronutrient content of soybean tissue.
JPNUDS. Vasilas, B.L. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Feb 1987. v. 10 (2). p. 113-127. Includes references. (NAL Call No.: DNAL QK867.J67).

0453

Effect of soil potassium availability on soybean root and shoot growth under unrestrained rooting conditions.
JPNUDS. Coale, F.J. Grove, J.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1986. v. 9 (12). p. 1565-1584. Includes 29 references. (NAL Call No.: DNAL QK867.J67).

0454

Effect of soil surface color on soybean seedling growth and nodulation.
Hunt, P.G. Kasperbauer, M.J.; Matheny, T.A. Ankeny, Iowa : Soil Conservation Society of America, c1987. The role of legumes in conservation tillage systems / J.F. Power, editor. Paper presented at the "National Conference on the Role of Legumes in Conservation Tillage Systems", April 27-29,

1987, University of Georgia, Athens, Georgia. p. 105-106. Includes references. (NAL Call No.: DNAL SB203.R6).

0455

Effect of soybean root exudates on Bradyrhizobium japonicum.
JPNUDS. Mahmoud, S.M. Angle, J.S. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9116). p. 1255-1261. Includes references. (NAL Call No.: DNAL QK867.J67).

0456

Effective rates of fertilization for correcting manganese deficiency in soybeans.
AGJOAT. Mascagni, H.J. Jr. Cox, F.R. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1985. v. 77 (3). p. 363-366. Includes references. (NAL Call No.: DNAL 4 AM34P).

0457

Effects of Bradyrhizobium japonicum and soybean (Glycine max (L.) Merr.) phosphorus nutrition on nodulation and dinitrogen fixation.
APMBA. Mullen, M.D. Israel, D.W.; Wollum, A.G. II. Washington, D.C. : American Society for Microbiology. Cells of Bradyrhizobium japonicum were grown in media containing either 1.0 mM or 0.5 microM phosphorus. In growth pouch experiments, infection of the primary root of soybean (Glycine max (L.) Merr.) by B. japonicum USDA 31, 110, and 142 was significantly delayed when P-limited cells were applied to the root. In a greenhouse experiment, B. japonicum USDA 31, 110, 142, and 142 grown with sufficient and limiting P were used to inoculate soybeans which were grown with either 5 microM or 1 mM P nutrient solution. P-limited cells of USDA 31 and 110 formed significantly fewer nodules than did P-sufficient cells, but P-limited cells of USDA 122 and 142 formed more nodules than P-sufficient cells. The increase in nodule number by P-limited cells of USDA 110 resulted in significant increases in path nodule mass and shoot total N. In plants grown with 1 mM P, inoculation with P-limited cells of USDA 110 resulted in lower total and specific nitrogenase activities than did inoculation with P-sufficient cells. Nodule numbers, shoot dry weights, and total N and P were all higher in plants grown with 1 mM P, and plants inoculated with USDA 31 grew poorly relative to plants receiving strains USDA 110, 122, and 142. Although the effects of soybean P nutrition were more obvious than those of B. japonicum P nutrition, we feel that it is important to develop an awareness of the behavior of the bacterial symbiont under conditions of nutrient limitation similar to those found in many soils. Applied and environmental microbiology. Oct 1988. v. 54 (10). p. 2387-2392. Includes references. (NAL Call No.: DNAL 448.3 AP5).

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Effects of cover inoculation of soybean on nodulation, nitrogen fixation, and yield.
AGJOAT. Ciafardini, G. Barbieri, C. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1987. v. 79 (4). p. 645-648. Includes references. (NAL Call No.: DNAL 4 AM34P).

0459

Effects of foliar fertilization on yield, protein, oil and elemental composition of two soybean varieties.
CSOSA2. Chowdhury, I.R. Paul, K.B.; Eivazi, F.; Bleich, D. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1985. v. 16 (7). p. 681-692. Includes 22 references. (NAL Call No.: DNAL S590.C63).

0460

Effects of herbicides on the survival of Rhizobium japonicum strains.
WEESA6. Moorman, T.B. Champaign, Ill. : Weed Science Society of America. Weed science. July 1986. v. 34 (4). p. 628-633. Includes 23 references. (NAL Call No.: DNAL 79.8 W41).

0461

Effects of high temperatures and starter nitrogen on the growth and nodulation of soybean.
CRPSAY. La Favre, A.K. Eaglesham, A.R.J. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1987. v. 27 (4). p. 742-745. Includes references. (NAL Call No.: DNAL 64.8 C883).

0462

Effects of low application rates of digested sewage sludge on yield and elemental uptake of corn, soybeans, and wheat.
Logan, T.J. Miller, R.H. Wooster, Ohio : The Center. Research bulletin - Ohio Agricultural Research and Development Center. Jan 1985. (1167). 19 p. Includes 6 references. (NAL Call No.: DNAL 100 OH3S (2)).

0463

Effects of prolonged flooding on soybean at the R2 growth stage. I. Dry matter and N and P accumulation.
JPNUDS. Sallam, A. Scott, H.D. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (5). p. 567-592. Includes references. (NAL Call No.: DNAL QK867.J67).

0464

Effects of prolonged flooding on soybean at the R2 growth stage. II. N and P uptake and translocation.
JPNUDS. Scott, H.D. Sallam, A. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (5). p. 593-608. Includes references. (NAL Call No.: DNAL QK867.J67).

0465

Effects of ultraviolet-B irradiance on soybean. VII. Biomass and concentration and uptake of nutrients at varying P supply.
JPNUDS. Murali, N.S. Teramura, A.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1985. v. 8 (2). p. 177-192. Includes 34 references. (NAL Call No.: DNAL QK867.J67).

0466

Endogenous NO3- in the root as a source of substrate for reduction in the light.
PLPHA. Rufty, R.W. Jr. Volk, R.J.; MacKown, C.T. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1987. v. 84 (4). p. 1421-1426. Includes references. (NAL Call No.: DNAL 450 P692).

0467

Enzymes of alpha,alpha-trehalose metabolism in soybean nodules.
PLPHA. Salminen, S.O. Streeter, J.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 538-541. Includes 28 references. (NAL Call No.: DNAL 450 P692).

0468

Evaluation of biochemical indicators of Fe and Mn nutrition for soybean plants. II. Superoxide dismutases, chlorophyll contents and photosystem II activity.
JPNUDS. Leidi, E.O. Gomez, M.; Rio, L.A. del. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Feb 1987. v. 10 (3). p. 261-271. Includes references. (NAL Call No.: DNAL QK867.J67).

0469

Evaluation of catalase and peroxidase activity as indicators of Fe and Mn nutrition for soybean.
JPNUDS. Leidi, E.O. Gomez, M.; Guardia, M.D. de la. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Sept 1986. v. 9 (9). p. 1239-1249. Includes 37 references. (NAL Call No.: DNAL QK867.J67).

0470

Evidence for the existence of different uptake mechanisms in soybean and sorghum for iron and manganese.
JPNUDS. Baxter, J.C. Osman, M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Jan 1988. v. 11 (1). p. 51-64. Includes references. (NAL Call No.: DNAL QK867.J67).

0471

Glycine-Glomus-Rhizobium symbiosis. V. Effects of mycorrhiza on nodule activity and transpiration in soybeans under drought stress.
PLPHA. Bethlenfalvay, G.J. Brown, M.S.; Mihara, K.L.; Stafford, A.E. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1987. v. 85 (1). p. 115-119. Includes references. (NAL Call No.: DNAL 450 P692).

0472

The Glycine-Glomus-Rhizobium symbiosis. III. Endophyte effects on leaf carbon, nitrogen, and phosphorus nutrition.
JPNUDS. Brown, M.S. Bethlenfalvay, G.J. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Sept 1986. v. 9 (9). p. 1199-1212. Includes 22 references. (NAL Call No.: DNAL QK867.J67).

0473

Glycine-Glomus-Rhizobium symbiosis. VI. Photosynthesis in nodulated, mycorrhizal, or N- and P-fertilized soybean plants.
PLPHA. Brown, M.S. Bethlenfalvay, G.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1987. v. 85 (1). p. 120-123. Includes references. (NAL Call No.: DNAL 450 P692).

0474

Induction of symbiotically defective auxotrophic mutants of Rhizobium fredii HH303 by transposon mutagenesis.
APMBA. Kim, C.H. Kuykendall, L.D.; Shah, K.S.; Keister, D.L. Washington, D.C. : American Society for Microbiology. Abstract: Symbiotically defective auxotrophic mutants

were isolated by transposon Tn5 mutagenesis of Rhizobium fredii HH303 , a fast-growing microsymbiont of North American commerical soybean cultivars such as Glycine max cv. Williams. Three different Tn5-carrying suicide vectors, pBLK1-2, pSUP1011, and pGS9, were used for mutagenesis with transposition frequencies of 4 X 10(-5), 3 X 10(-6), and 1 X 10(-6), respectively, while the frequency of background mutation resistant to 500 micrograms of kanamycin per ml was 1 X 10(-8). From 2,6000 Tn5-induced mutants, 14 auxotrophic mutants were isolated and classified in seven groups including adenosine (four), aspartate (two), cysteine or methionine (two), isoleucine and valine (two), nicotinic acid (one), pantothenic acid (one), and uracil (two). All the auxotrophs induced nodulation on soybean, but the symbiotic effectiveness of each mutant was different. Three auxotrophs (two cysteine or methionine and one pantothenic acid) formed effective nodules similar to those of the wild type. Three auxotrophs (one nicotinic acid and two aspartate) produced mature nodules like those of the wild type, but the nodules lacked the characteristic pink color inside and were unable to fix nitrogen. Four auxotrophs (two adenosine and two uracil) induced pseudonodules unable to fix nitrogen. The other four auxotrophs repeatedly induced both effective and ineffective nodules, but bacteroids isolated from the effective nodules were protrophi c revertants. The symbiotic phenotype and the degree of effectiveness of the auxotrophic mutants varied with the type of mutation. Applied and Environmental microbiology. Feb 1988. v. 54 (2). p. 423-427. ill. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0475

Influence of Glomus claroideum (VAM fungus) and phosphorus levels on soybean growth in fumigated microplots.
Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University , Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 253. (NAL Call No.: DNAL aQK604.N6 1984).

0476

Influence of phosphorus nutrition on phosphorus and nitrogen utilization efficiencies and associated physiological responses in soybean.
CRPSAY. Israel, D.W. Rufty, T.W. Jr. Madison, Wis. : Crop Science Society of America. Since nutrient concentrations in plant tissues are diluted by growth when the supplies in the root zone are limited, it has been difficult to evaluate the effects of nutrient stress on the efficiency of nutrient utilization in dry matter production by plants. Therefore, this study was initiated to apply the nutrient utilization efficieny concept, (whole plant biomass)/(whole plant nutrient concentration), in evaluating the effect of variable P supply on the utilization of P and N in dry matter production by soybean Glycine max (L) Merr. plants and to assess physiological responses associated with changes in nutrient utilization efficiency. Soybean plants inoculated with Bradyrhizobium japonicum USDA 110 were grown in outdoor pot culture and supplied daily with either minus N or 20 mM NO3- solutions containing 0 to 2.0 mM KH2PO4. Phosphorus utilization efficiencies and biomass accumulation for plants in both N regimes increased with P supply up to external concentrations of 0.25 to 0.50 mM. At the external P concentrations greater than 0.50 mM, P utilization efficiencies declined as P concentrations in the tissue increased without any additional growth. Maximal N utilization efficiencies in both N regimes were also attained at external P concentrations of 0.25 to 0.50 mM; however, they did not decrease at higher external P concentrations. Increases in P and N utilization efficiencies were associated with (i) increases in whole plant leaf areas and leaf area ratio, (ii) decreases in morning starch concentrations in leaves, (iii) increases in the relative proportions of dry matter, P, and N in shoot tissues, (iv) decreases in concentrations of soluble reduced-N in tissues of NO3- -assimilating plants, and (v) increases in concentrations of soluble reduced-N in tissues of N2-fixing plants. Crop science. Nov/Dec 1988. v. 28 (6). p. 954-960. Includes references. (NAL Call No.: DNAL 64.8 C883).

0477

The influence of trifluralin and pendimethalin on nodulation, N2 (C2H2) fixation, and seed yield of field-grown soybeans (Glycine max).
WEESA6. Bollich, P.K. Dunigan, E.P.; Kitchen, L.M.; Taylor, V. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 15-19. Includes references. (NAL Call No.: DNAL 79.8 W41).

0478

Inorganic nutrient analysis of leaf tissue from soybean lines screened for Mexican bean beetle resistance.
JESCEP. Mebrahtu, T. Kenworthy, W.J.; Elden, T.C. Tifton, Ga. : The Entomological Science Society. Journal of Entomological Science. Jan 1988. v. 23 (1). p. 44-51. Includes references. (NAL Call No.: DNAL QL461.G4).

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Insensitivity of soybean photosynthesis to ultraviolet-B radiation under phosphorus deficiency.
JPNUDS. Murali, N.S. Teramura, A.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (5). p. 501-515. Includes references. (NAL Call No.: DNAL

QK867.J67).

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Interacting effects of applied P, lime, and VAM on soybean.
Maddox, J.J. Raines, S.G.; Soileau, J.M. Corvallis, Or. : Oregon State University , Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 236. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

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Interactions between nitrate reduction and nitrogen fixation in grain legumes.
Neyra, C.A. Stephens, B.D. Rockville, Md. : American Society of Plant Physiologists, c1985. Exploitation of physiological and genetic variability to enhance crop productivity / edited by James E. Harper, Lawrence E. Schrader, and Robert W. Howell. Literature review. p. 12-22. Includes 59 references. (NAL Call No.: DNAL SB189.4.E97).

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Iron-stress response mechanism and iron uptake in iron-efficient and -inefficient tomatoes and soybeans treated with cobalt.
JPNUDS. Blaylock, A.D. Jolley, V.D.; Brown, J.C.; Davis, T.D.; Walser, R.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1985. v. 8 (2). p. 163-176. Includes 29 references. (NAL Call No.: DNAL QK867.J67).

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Pacovsky, R.S. Fuller, G. New York : Plenum Press, c1987. The metabolism structure, and function of plant lipids / edited by Paul K. Stumpf, J. Brian Mudd, and W. David Nes. Paper presented at the "Seventh International Symposium on Plant Lipids," held July 27-August 1, 1986, University of California, Davis, California. p. 349-351. Includes references. (NAL Call No.: DNAL QK898.L56I55 1986).

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Mechanisms of retrieval and metabolism following phloem unloading.
Bennett, A.B. Damon, S.; Osteryoung, K.; Hewitt, J. New York : Alan R. Liss. Plant biology. In the series analytic: Phloem Transport / edited by J. Cronshaw, W.J. Lucas and R.T. Giaquinta. Proceedings of an International Conference, August 18-23, 1985, Asilomar, California. 1986. v. 1. p. 307-316. Includes references. (NAL Call No.: DNAL QH301.P535).

0485

Nitrogen accumulation and partitioning in hail-damaged soybeans.
JPNUDS. Henson, R.A. Heichel, G.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1986. v. 9 (11). p. 1453-1468. Includes references. (NAL Call No.: DNAL QK867.J67).

0486

Nitrogen from soybean for dryland sorghum.
AGJOAT. Gakale, L.P. Clegg, M.D. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1987. v. 79 (6). p. 1057-1061. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Nitrogen nutrition and growth regulator effects of oxamide on wheat and soybean.
JPNUDS. Schuler, S.F. Paulsen, G.M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Feb 1988. v. 11 (2). p. 217-233. Includes references. (NAL Call No.: DNAL QK867.J67).

0488

Nitrogen stress effects on growth and seed yield of nonnodulated soybean exposed to elevated carbon dioxide.
CRPSAY. Cure, J.D. Israel, D.W.; Rufty, T.W. Jr. Madison, Wis. : Crop Science Society of America. Limitations in nutrient availability apparently can restrict plant response to CO2 enrichment; however, the alterations in physiological processes associated with such restrictions have not been defined. This experiment was conducted to investigate certain physiological responses of N-limited soybean Glycine max (L.) Merr. cv. Lee plants growing in a CO2 enriched environment and to examine their role in determining growth and yield. The nonnodulating soybean plants were grown to maturity in controlled environment chambers at 350 or 700 micro liters L-1 CO2 and at 0.05, 1.0, 2.5, 5.0, or 10.0 mM KNO-3 supplied in nutrient solution. Substantial increases in whole-plant growth and seed yield occurred in both CO2 treatments with increasing nitrate levels; the increases were greater, however, at high CO2. At all NO-3 levels except the lowest, exposure to high CO2 resulted in increased total leaf area, mean net assimilation rate, NO-3 uptake, and N utilization efficiency. Increased NO-3 uptake was associated with larger root systems, as uptake per unit of root mass was lower than controls. Carbon dioxide

enrichment had little effect on dry matter partitioning among plant parts or harvest index. Alterations in partitioning were related to differences in NO-3 supply. The results suggest that atmospheric CO2 enrichment can stimulate seed yield of soybean even when the availability of N in the rhizosphere is limited. Crop science. July/Aug 1988. v. 28 (4). p. 671-677. Includes references. (NAL Call No.: DNAL 64.8 C883).

0489

Nitrogen utilization from fertilizer and legume residues in legume-corn rotations.
AGJOAT. Hesterman, O.B. Russelle, M.P.; Sheaffer, C.C.; Heichel, G.H. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1987. v. 79 (4). p. 726-731. Includes references. (NAL Call No.: DNAL 4 AM34P).

0490

Nodulation, nitrogen fixation, and hydrogen oxidation by pigeon pea Bradyrhizobium spp. in symbiotic association with pigeon pea, cowpea, and soybean.
APMBA. Nautiyal, C.S. Hegde, S.V.; Berkum, P. van. Washington, D.C. : American Society for Microbiology. Astract: The pigeon pea strains of Bradyrhizobium CC-1, CC-8, UASGR(S), and F4 were evaluated for nodulation, effectiveness for N2 fixation, and H2 oxidation with homologous and nonhomologous host plants. Strain CC-1 nodulated Macroptilium atropurpureum, Vigna unguiculata, Glycine max, and G. soja but did not nodulate Pisum sativum, Phaseolus vulgaris, Trigonella foenum-graecum, and Trifolium repens. Strain F4 nodulated G. max cv. Peking and PI 434937 (Malayan), but the symbioses formed were poor. Similarly, G. max cv. Peking, cv. Bragg, PI 434937, PR 13-28-2-8-7, and HM-1 were nodulated by strain CC-1, and symbioses were also poor. G. max cv. Williams and cv. Clark were not nudulated. H2 uptake activity was expressed with pigeonpea and cowpea, but not with soybean. G. max cv. Bragg grown in Bangalore, India, in local soil not previously exposed to Bradyrhizobium japonicum formed nodules with indigenous Bradyrhizobium spp. Six randomly chosen isolates, each originating from a different nodule, formed effective symbioses with pigeon pea host ICPL-407, nodulated PR 13-28-2-8-7 soybean forming moderately effective symbioses, and did not nodulate Williams soybean. These results indicate the six isolates to be pigeon pea strains although they originated from soybean nodules. Host-determined nodulation of soybean by pigeon pea Bradyrhizobium spp. may depend upon the ancestral backgrounds of the cultivars. The poor symbioses formed by the pigeon pea strains with soybean indicate that this crop should be inoculated with B. japonicum for its cultivation in soils containing only pigeon pea Bradyrhizobium spp. Applied and Environmental microbiology. Jan 1988. v. 54 (1). p. 94-97. Includes references. (NAL Call No.: DNAL 448.3 AP5).

0491

Nodule activity and allocation of photosynthate of soybean during recovery from water stress.
PLPHA. Fellows, R.J. Patterson, R.P.; Raper, C.D. Jr.; Harris, D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1987. v. 84 (2). p. 456-460. Includes references. (NAL Call No.: DNAL 450 P692).

0492

Nodule development in a split-root system in response to red and far-red light treatment of soybean shoots.
CRPSAY. Hunt, P.G. Kasperbauer, M.J.; Matheny, T.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 973-976. Includes references. (NAL Call No.: DNAL 64.8 C883).

0493

Obtaining effective nodulation of soybeans.
Thomison, P.R. College Park, Md. : The Service. The Agronomist - Cooperative Extension Service, University of Maryland. May 1986. v. 23 (5). p. 5-6. (NAL Call No.: DNAL S71.A46).

0494

Ozone and soil moisture deficit effects on nitrogen metabolism of soybean.
CRPSAY. Flagler, R.B. Patterson, R.P.; Heagle, A.S.; Heck, W.W. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1987. v. 27 (6). p. 1177-1184. Includes references. (NAL Call No.: DNAL 64.8 C883).

0495

P nutrition during seed development. Leaf senescence, pod retention, and seed weight of soybean.
PLPHA. Grabau, L.J. Blevins, D.G.; Minor, H.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1986. v. 82 (4). p. 1008-1012. Includes references. (NAL Call No.: DNAL 450 P692).

0496

Partitioning of symbiotically fixed nitrogen in soybeans and alfalfa.
Henson, R.A. Heichel, G.H. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1984. v. 24 (5). p. 986-990. ill. Includes 25 references. (NAL Call No.: 64.8 C883).

0497

Plant response to mycorrhizal fungi: host, endophyte, and soil effects.
SSSJD4. Bethlenfalvay, G.J. Ulrich, J.M.; Brown, M.S. Madison, Wis. : The Society. Soil Science Society of America journal. Sept/Oct 1985. v. 49 (5). p. 1164-1168. Includes references. (NAL Call No.: DNAL 56.9 S03).

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Potassium nutrition of soybeans.
Hanway, J.J. Johnson, J.W. Madison, Wis. : American Society of Agronomy, 1985. Potassium in agriculture / Robert D. Munson, editor. Paper presented at an international symposium, 7-10 July 1985, Atlanta, Georgia.~ Literature review. p. 753-764. Includes references. (NAL Call No.: DNAL S587.5.P6P68).

0499

Quantitative assay for binding of Bradyrhizobium japonicum to cultured soybean cells.
JOBAAY. Ho, S.C. Ye, W.; Schindler, M.; Wang, J.L. Washington, D.C. : American Society for Microbiology. Incubation of Bradyrhizobium japonicum with the cultured soybean cell line SB-1 resulted in the adhesion of the bacteria to the plant cells. An antiserum was raised against B. japonicum, and the 125I-labeled immunoglobulin fraction was used to quantitate the number of bacteria bound to the soybean cells. The measurement of 125I-labeled antibody binding correlated well with parallel assays by microscopic observation. Using this quantitation, we have optimized the parameters of the assay in terms of time course, ratio of B. japonicum to SB-1 cells, and pH. We then explored the effects of saccharides, NaCl, EDTA, and culture age of the bacteria and SB-1 cells on B. japonicum binding under these optimal assay conditions. The resultsshowed good correlation between conditions that govern B. japonicum binding to SB-1 cells in culture and those that regulate B. japonicum-induced nodulation in legume roots. Together, they suggest that this binding event may be important to controlling host specificity. Journal of bacteriology. Sept 1988. v. 170 (9). p. 3882-3890. ill. Includes references. (NAL Call No.: DNAL 448.3 J82).

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Regulation of nodulation in the soybean-Rhizobium symbiosis. Strain and cultivar variability.
PLPHA. Heron, D.S. Pueppke, S.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1987. v. 84 (4). p. 1391-1396. Includes references. (NAL Call No.: DNAL 450 P692).

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Regulation of soybean nitrogen fixation in response to rhizosphere oxygen. I. Role of nodule respiration.
PLPHA. Weisz, P.R. Sinclair, T.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1987. v. 84 (3). p. 900-905. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0502

Regulation of soybean nitrogen fixation in response to rhizosphere oxygen. II. Quantification of nodule gas permeability.
PLPHA. Weisz, P.R. Sinclair, T.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1987. v. 84 (3). p. 906-910. Includes references. (NAL Call No.: DNAL 450 P692).

0503

Regulation of the soybean-Rhizobium nodule symbiosis by shoot and root factors.
PLPHA. Delves, A.C. Mathews, A.; Day, D.A.; Carter, A.S.; Carroll, B.J.; Gresshoff, P.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1986. v. 82 (2). p. 588-590. Includes references. (NAL Call No.: DNAL 450 P692).

0504

The relationship between nodulation, N2)C2H2) fixation, and jsoybean growth stage.
PLAAA. Bollich, P.K. Dunigan, E.P. s.l. : The Academy. The proceedings of the Louisiana Academy of Sciences. Dec 31, 1984. v. 47 (2). p. 15-18. Includes 7 references. (NAL Call No.: DNAL 500 L932).

0505

Relative sensitivity of nitrogen and biomass accumulation to drought in field-grown soybean.
AGJOAT. Sinclair, T.R. Muchow, R.C.; Bennett, J.M.; Hammond, L.C. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1987. v. 79 (6). p. 986-991. Includes references. (NAL Call No.: DNAL 4 AM34P).

0506

Residual effects of sewage sludge on soybean. II. Accumulation of soil and symbiotically fixed nitrogen.
JEVQAA. Heckman, J.R. Angle, J.S.; Chaney, R.L. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1987. v. 16 (2). p. 118-124. Includes references. (NAL Call No.: DNAL QH540.J6).

0507

Response of four soybean cultivars in fumigated microplots to inoculation with Glomus claroideum (VAM fungus).
Skipper, H.D. Struble, J.E. Corvallis, Or. : Oregon State University , Forest Research Laboratory, 1985. Proceedings of the 6th North American Conference on Mycorrhizae : June 25-29, 1984, Bend, Oregon / compiled and edited by Randy Molina ; sponsoring institutions, Oregon State University, College of Forestry, and USDA. p. 252. Includes references. (NAL Call No.: DNAL aQK604.N6 1984).

0508

Response of mycorrhizal and P-fertilized soybeans to nodulation by Bradyrhizobium or ammonium nitrate.
CRPSAY. Pacovsky, R.S. Paul, E.A.; Bethlenfalvay, G.J. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1986. v. 26 (1). p. 145-150. Includes 32 references. (NAL Call No.: DNAL 64.8 C883).

0509

Response to soil temperature of dinitrogen fixation (acetylene reduction) rates by field-grown soybeans.
AGJOAT. Sinclair, T.R. Weisz, P.R. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1985. v. 77 (5). p. 685-688. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Seed treatment for control of iron-deficiency chlorosis of soybean.
CRPSAY. Karkosh, A.E. Walker, A.K.; Simmons, J.J. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 369-370. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Serine hydroxymethyltransferase from soybean root nodules.
PLPHA. Mitchell, M.K. Reynolds, P.H.S.; Blevins, D.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 553-557. Includes 30 references. (NAL Call No.: DNAL 450 P692).

0512

Soil oxygen effects on two determinate soybean isolines.
SOSCAK. Sojka, R.E. Baltimore, Md. : Williams & Wilkins. Soil science. Nov 1985. v. 140 (5). p. 333-343. ill. Includes references. (NAL Call No.: DNAL 56.8 S03).

0513

Solubility characteristics of residual phosphate in a fertilized and limed Ultisol.
SSSJD4. Harrison, R.B. Adams, F. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1987. v. 51 (4). p. 963-969. Includes references. (NAL Call No.: DNAL 56.9 S03).

0514

Soybean response to iron-deficiency stress as related to iron supply in the growth medium.
JPNUDS. Jolley, V.D. Brown, J.C. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (6). p. 637-651. Includes references. (NAL Call No.: DNAL QK867.J67).

0515

Two indirect methods for detecting ureide synthesis by nodulated legumes.
PLPHA. Triplett, E.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 566-571. ill. Includes 28 references. (NAL Call No.: DNAL 450 P692).

0516

Uptake of nitrogen from soil, fertilizer, and crop residues by no-till corn and soybean.
SSSJD4. Power, J.F. Doran, J.W.; Wilhelm, W.W. Madison, Wis. : The Society. Journal - Soil Science Society of America. Jan/Feb 1986. v. 50 (1). p. 137-142. Includes references. (NAL Call No.: DNAL 56.9 S03).

0517

Abscisic acid and its relationship to seed filling in soybeans.
PLPHA. Schussler, J.R. Brenner, M.L.; Brun, W.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 301-306. ill. Includes 26 references. (NAL Call No.: DNAL 450 P692).

0518

Abscission, total soluble sugars, and starch profiles within a soybean canopy.
AGJOAT. Antos, M. Wiebold, W.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1984. v. 76 (5). p. 715-719. Includes references. (NAL Call No.: DNAL 4 AM34P).

0519

Absorption, translocation, and metabolism of foliage-applied chloramben in velvetleaf (Abutilon theophrasti) and soybean (Glycine max).
WEESA6. Ozair, C.A. Moshier, L.J.; Werner, G.M. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1987. v. 35 (6). p. 757-762. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0520

Accumulation of 14C-radiolabel in leaves and friuts after injection of 14C tryptophan into seeds of soybean.
PLPHA. Hein, M.B. Brenner, M.L.; Brun, W.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1986. v. 82 (2). p. 454-456. Includes references. (NAL Call No.: DNAL 450 P692).

0521

Acetate activation in extracts of Bradyrhizobium japonicum.
Preston, G.G. Wall, J.D.; Emerich, D.W. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia. Meeting held on April 2-4, 1986. 1986. v. 5. p. 202. Includes references. (NAL Call No.: DNAL QK861.P55).

0522

Acetate kinase activity in Bradyrhizobium japonicum bacteroids.
Preston, G.G. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia. 1987. v. 6. p. 160. Includes references. (NAL Call No.: DNAL QK861.P55).

0523

The acetylcholine-ethylene connection.
PPGGD. Jones, R.S. Stutte, C.A. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1984. (11th). p. 46-51. Includes references. (NAL Call No.: DNAL SB128.P5).

0524

Achieving maximum germination potential in germination tests of soybean (Glycine max, prehydratin, imbibition, imbibition injury, seed lots).
Schultz, Q.E. Evenson, P.D. East Lansing, Mich. : Association of Official Seed Analysts. Journal of seed technology. 1983. v. 8 (1). p. 31-40. ill. Includes references. (NAL Call No.: SB113.2.J6).

0525

Acifluorfen-induced isoflavonoids and enzymes of their biosynthesis in mature soybean leaves. Whole leaf and mesophyll responses.
PLPHA. Cosio, E.G. Weissenbock, G.; McClure, J.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1985. v. 78 (1). p. 14-19. Includes 28 references. (NAL Call No.: DNAL 450 P692).

0526

Aggregate stability of a silt loam soil as affected by roots of corn, soybeans and wheat.
CSOSA2. Monroe, C.D. Kladivko, E.J. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Oct 1987. v. 18 (10). p. 1077-1087. Includes references. (NAL Call No.: DNAL S590.C63).

0527

Alcohol dehydrogenase and pyruvate decarboxylase activity in leaves and roots of eastern cottonwood (Populus deltoides Bartr.) and soybean (Glycine max L.).
PLPHA. Kimmerer, T.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1987. v. 84 (4). p. 1210-1213. Includes references. (NAL Call No.: DNAL 450 P692).

0528

Alteration of 14C (carbon isotope)-assimilate partitioning in leaves of soybeans having increased reproductive loads at one node (Alteration between starch and water-soluble compounds).
Carlson, D.R. Brun, W.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1984. v. 75 (4). p. 887-890. ill. Includes references. (NAL Call No.: 450 P692).

0529

Alterations in leaf carbohydrate metabolism in response to nitrogen stress.
PLPHA. Rufty, T.W. Jr. Huber, S.C.; Volk, R.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1988. v. 88 (3). p. 725-730. Includes references. (NAL Call No.: DNAL 450 P692).

0530

Alterations in soybean root development due to cultural practices: a review.
CSOSA2. Coale, F.J. Grove, J.H. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Literature review. 1986. v. 17 (8). p. 799-818. Includes 82 references. (NAL Call No.: DNAL S590.C63).

0531

Aluminum and pH limitations for germination and radicle growth of soybean.
JPNUDS. Suthipradit, S. Alva, A.K. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1986. v. 9 (1). p. 67-73. Includes references. (NAL Call No.: DNAL QK867.J67).

0532

Amino acid transport in protoplasts isolated from soybean leaves.
PLPHA. VerNooy, C.D. Lin, W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 8-11. Includes 15 references. (NAL Call No.: DNAL 450 P692).

0533

Analysis for nonextractable (bound) residues of pentachlorophenol in plant cells using a cell wall fractionation procedure.
EESAD. Langebartels, C. Harms, H. Orlando, Fla. : Academic Press. Ecotoxicology and environmental safety. Oct 1985. v. 10 (2). p. 268-279. Includes references. (NAL Call No.: DNAL QH545.A1E29).

0534

Analysis of differences in sink activity among soybean genotypes based on dry matter accumulation rates per unit seedcoat area.
CRPSAY. Hanson, W.D. Madison, Wis. : Crop Science Society of America. This study tested the hypothesis that genetic differences for sink activity, a component of sink strength, affect assimilate flux to seeds in soybean Glycine max (L.) Merr. . Dry matter accumulation rate per unit seedcoat area (SDMAR) was selected to investigate sink activity. The capacity to maintain high SDMAR under limiting and nonlimiting assimilate availability was used to identify those genotypes having high sink activity. The ellipsoid served as the model to determine seedcoat area and seed volume. Four soybean genotypes differing in accumulation rates and 24 genotypes reflecting divergent selection for seed yield were evaluated in the greenhouse under three treatments: control, side leaflets removed, and pods removed except for selected pods. Highly significant mean squares for SDMAR were found for genotypes and for the genotype-by-treatment interaction. The SDMARs for genotypes with high and with low SDMAR were proportionately affected under treatments that decreased or increased SDMAR. High SDMAR imparted no advantage for maintaining assimilate utilization under limiting assimilates. Further, genotypes selected for high and for low seed yields had similar SDMARs. The results do not support the concept of major differences in sink activity among genotypes. The pod-removed treatment increased SDMAR 16% and reduced the increase in seed dry weight per unit volume associated with maturation, or it delayed the maturation process. High yielding genotypes had lower dry weight per seed volume than low yielding genotypes. The capacity to maintain sink activity may be a component for high seed yield. Crop science. Sept/Oct 1988. v. 28 (5). p. 830-834. Includes references. (NAL Call No.: DNAL 64.8 C883).

0535

An analysis of growth regulator interactions and gene expression during auxin-induced cell elongation using cloned complementary DNAs to auxin-responsive messenger RNAs.
PLPHA. Walker, J.C. Legocka, J.; Edelman, L.; Key, J.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1985. v. 77 (4). p. 847-850. ill. Includes 26 references. (NAL Call No.: DNAL 450 P692).

0536

Analysis of the herbicide diuron in crops.
JAFCAU. Zahnow, E.W. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. May/June 1987. v. 35 (3). p. 403-406. Includes references. (NAL Call No.: DNAL 381 J8223).

0537

Antagonistic effect of gibberellic acid and boron on protein and carbohydrate metabolism of soybean germinating seeds.
JPNUDS. De la Haba, P. Roldan, J.M.; Jimenez, F. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1985. v. 8 (11). p. 1061-1073. Includes 25 references. (NAL Call No.: DNAL QK867.J67).

0538

Antiethylene properties of AgNO3 and 2,5-norbornadiene in light and dark in Vigna radiata.
JPGRDI. Curtis, R.W. New York, N.Y. : Springer. Journal of plant growth regulation. 1987. v. 6 (1). p. 41-56. Includes references. (NAL Call No.: DNAL QK745.J6).

0539

Antioxidant levels in germinating soybean seed axes in relation to free radical and dehydration tolerance.
PLPHA. Senaratna, T. McKersie, B.D.; Stinson, R.H. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1985. v. 78 (1). p. 168-171. Includes 20 references. (NAL Call No.: DNAL 450 P692).

0540

Approaches to yield enhancement--environmental factors.
PPGGD. Christy, A.L. Williamson, D.R.; Brown, P.W.; Pirog, R.S. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1984. (11th). p. 250-254. Includes references. (NAL Call No.: DNAL SB128.P5).

0541

Approved methods of the American Association of Cereal Chemists /compiled and published by the Approved Methods Committee. --.
American Association of Cereal Chemists. St. Paul, Minn., USA : AACC, 1983-. Abstract: A rigorous renovation and upgrade of the 1962 (7th) edition of this reference work provides numerous specific analytical methods, information, and guidelines to assist cereal chemists in the characterization and quality control of cereal products. These methods include: fat acidity; analysis of various acids (inorganic, fatty, organic); admixtures of flours; total ash in various products; baking quality tests; carbon dioxide determinations; analyses of color, pigments, drugs, egg solids; various enzymes activities; experimental milking methods; the determination of crude fat, fiber, gluten and various inorganic constituents; task panel tests; assessments of various contaminants (microorganisms, mycotoxins, pesticide and herbicide residues); sampling characteristics (sample preparations, sampling techniques, solids, solutions, specific volume, statistical principles); assessments of product quality (physical dough tests; other physical tests; physiological tests; special properties of fats, oils, and shortenings; staleness); and analytical methods for soybean protein, starch, sugars, vitamins, and water hydration quality. Each method delineates its scope, apparatus and reagent needs, procedure, and relevant literature references. Illustrations, equations, and tables are included where necessary. (wz). Cover title: American Association of Cereal Chemists approved methods.~ Spine title: AACC methods. 2 v. (loose-leaf) : ill. (some col.) ; 26 cm. Includes bibliographies and index. (NAL Call No.: DNAL TX557.A4 1983).

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(ca. 45 degree N). Indices for adaptation to cool nights were calculated for seed yield, above ground dry matter (excluding leaves), apparent harvest index, seed weight, and days to maturity. These indices were calculated based on the performance of each genotype for a given trait in Corvallis relative to the mean performance of all genotypes within the same maturity group in Corvallis, as compared to the same value calculated for St. Paul. Genetic variations for adaptation to cool nights were identified for all the traits under investigation. In terms of seed yield, 'Fiskeby V' (MG 000), 'Caloria' and 'McCall' (MG 00), and 'Dawson' and 'Evans' (MG0) appeared to be most adapted to low night temperatures, while 'Maple Presto' (MG 000), 'Heike 3' and 'Maple Arrow' (MG 00), and PI 290119 and 'Ozzie' (MG 0) seemed to be least adapted to cool nights. It also appeared that different characteristics contributed to the differential adaptation of genotypes to cool nights for seed yield. This information should be useful in breeding programs to develop soybean cultivars less sensitive to variations in night temperature. Crop science. July/Aug 1988. v. 28 (4). p. 639-643. Includes references. (NAL Call No.: DNAL 64.8 C883).

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TISAA. La Bonte, D.R. Darding, R.L. Springfield, Ill. : The Academy. Transactions of the Illinois State Academy of Science. 1988. v. 81 (1/2). p. 39-44. Includes references. (NAL Call No.: DNAL 500 IL6).

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Soybean seed crude protein and oil levels in relation to weight, developmental time, and survival of southern green stink bug (Hemiptera: Pentatomidae).
EVETEX. Calhoun, D.S. Funderburk, J.E.; Teare, I.D. College Park, Md. : Entomological Society of America. The influence of soybean seed protein and oil level on developmental time, weight, and survival of southern green stink bug, Nezara viridula (L.), was examined. Developmental times and weights of adults and nymphs were similar to those reported by other researchers. Diet had a small but significant effect on developmental time to second, third, and fourth instar, with consumption of higher protein (lower oil) resulting in decreased developmental time (e.g., days to fourth instar = 13.3 on high protein diet compared with 15.2 on low protein diet). However, developmental time from hatch to fifth instar and adult was not significantly affected by diet. Maximum differences between diets at any life stage were only 2 d. Males and females had similar developmental times. Increasing seed protein resulted in greater adult weights of both males and female (e.g., weight of females = 182.2 mg on high protein diet compared with 153.0 mg on low protein diet) but had no effect on weight of nymphs. Females were significantly heavier than males from fourth instar to adult. Stink bug genotype (blocks) significantly affected developmental time and weight of all nymphal instars and adults. Survival was not affected by diet or stink bug genotype. Environmental entomology. Aug 1988. v. 17 (4). p. 727-729. Includes references. (NAL Call No.: DNAL QL461.E532).

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CRPSAY. McDonald, M.B. Jr. Vertucci, C.W.; Roos, E.E. Madison, Wis. : Crop Science Society of America. Seed imbibition is a critical stage in successful soybean Glycine max (L.) Merr. crop establishment. This study investigates soybean seed imbibition with emphasis on absorption of water by the seed parts (seed coat, embryonic axis, cotyledons, and whole seed). After 72 h imbibition, the embryonic axis was the most hydrated portion of the seed possessing greater than 50 g kg-1 fresh weight more water than any other seed part. The embryonic axis also hydrated more than the cotyledons in a high relative humidity environment when exposed as separated parts. Using polyethylene glycol 8000 as an osmotic agent, the seed coat, cotyledons, and whole seed contained a moisture content of approximately 550 g kg-1 fresh weight and the embryonic axis 700 g kg-1 fresh weight when germination (radicle emergence but less than 1.0 cm in length) occured. While the cotyledons and embryonic axes of accelerated aged seeds did not differ in liquid moisture uptake from nondeteriorated seeds, the axes from accelerated aged seeds absorbed less water than the unaged controls when the seed parts were hydrated at 100% relative humidity (RH). These studies show that the embryonic axis hydrates more than the cotyledons, identify the level of moisture in the embryonic axis at which soybean seed germination is observed, and indicate that deteriorated seeds hydrate in a manner similar to nondeteriorated seeds in liquid water but that differences in the axes are detectable when hydrated in a high humidity environment. Crop science. Nov/Dec 1988. v. 28 (6). p.

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CRPSAY. Rao-Arelli, A.P. Anand, S.C. Madison, Wis. : Crop Science Society of America. Soybean cyst nematode (SCN), Heterodera glycines Ichinohe, is a major pest of soybean, Glycine max L. Merr. Several plant introductions resistant to Race 3 have been identified, however the genetic relationships for resistance among them are not known. The F2 plants and F3 families from seven different crosses involving resistant parents were evaluated in the greenhouse to determine if the genes for resistance were identical or different from the genes in 'Peking' and/or PI 90763. Each seedling was inoculated with 1000 eggs and juveniles of SCN Race 3. Plant roots were washed after 30 d and white females enumerated. Based on the index of parasitism (IP) F2 plants and F3 families were categorized into resistant, segregating, or susceptible. The Chi-square test was applied to determine goodness of fit between the observed and expected genetic ratios. Peking was found to have genes in common with PI 90763 and PI 438489B; whereas PI 90763 has genes in common with PI 438489B, PI 404166, and PI 404198A. The cross between Peking and PI 88788 indicated segregation for one dominant and one recessive gene, and segregation in the cross PI 88788 X PI 438496B suggested two independent dominant genes. This information will assist soybean breeders in choosing additional resistant sources to SCN Race 3 in commercial cultivar development, thus providing a broader genetic base. Crop science. July/Aug 1988. v. 28 (4). p. 650-652. Includes references. (NAL Call No.: DNAL 64.8 C883).

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JONEB. Francl, L.J. Dropkin, V.H. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1985. v. 17 (4). p. 470-475. ill. Includes references. (NAL Call No.: DNAL QL391.N4J62).

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Heritability of tolerance to soybean cyst nematode in soybean.
CRPSAY. Reese, P.F. Jr. Boerma, H.R.; Hussey, R.S. Madison, Wis. : Crop Science Society of America. Tolerance to Heterodera glycines Ichinohe, soybean cyst nematode (SCN), has recently been identified as an additional control strategy to limit yield losses in soybean, Glycine max (L.) Merr. Heritability estimates are necessaryfor determining breeding strategies to increase tolerance to SCN. The objectivesof this study were to determine the heritability of tolerance in three soybean crosses and determine the degree of association between tolerance and seed yield in untreated and nematicide-treated plots. A tolerance index (TI) was calculatedusing the formula: (seed yield of untreated subplot divided seed yield of nematicide-treated subplot) X 100. Fifty-four F2-derived lines in the F4 and F5 generations and parents were evalua ted for TI in SCN-infested soil for 2 yr at two locations. The Athens, GA location was infested with SCN Race 3 and Waynesboro, GA with SCN Race 4. Heritabilityfor TI average 19% based on variance component estimates (three replications and two locations) and 26% for realized estimates (selection of top 11% of lines based on two-location means). There was a positive association between TI and seed yield in untreated subplots (r=0.78 to 0.90), but there was an inconsistent association between TI and seed yield in nematicide-treated subplots. The variance component estimates of heritability for seed yield in untreated subplots averaged 31% (three replications and two locations). These results indicated that susceptible genotypes can be evalu ated for seed yield without nematicides in SCN-infested soil in the early phasesof a breeding program to increase tolerance. Crop science. July/Aug 1988. v. 28 (4). p. 594-598. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PLDRA. Francl, I.J. Dropkin, V.H. St. Paul, Minn. : American Phytopathological Society. Plant disease. Aug 1986. v. 70 (8). p. 791-795. Includes 18 references. (NAL Call No.: DNAL 1.9 P69P).

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JEENAI. Lentz, G.L. Hayes, R.M.; Chambers, A.Y. College Park, Md. : Entomological Society of America. Journal of economic entomology. Dec 1985. v. 78 (6). p. 1217-1221. Includes references. (NAL Call No.: DNAL 421 J822).

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Zacharias, T.P. Liebman, J.S.; Noel, G.R. West Lafayette, Ind. : Purdue University. North Central journal of agricultural economics. July 1986. v. 8 (2). p. 175-188. Includes 27 references. (NAL Call No.: DNAL HD1773.A3N6).

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CRPSAY. Weaver, D.B. Rodriguez-Kabana, R.; Carden, E.L. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 293-298. Includes references. (NAL Call No.: DNAL 64.8 C883).

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JONEB. Minton, N.A. Parker, M.B.; Sumner, D.R. Raleigh, N.C. : Society of Nematologists. Journal of nematology. July 1985. v. 17 (3). p. 314-321. Includes 26 references. (NAL Call No.: DNAL QL391.N4J62).

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Nematode population attrition and histopathology of Heterodera glycines-soybean associations.
JONEB. Acedo, J.R. Dropkin, V.H.; Luedders, V.D. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Jan 1984. v. 16 (1). p. 48-57. ill. Includes 17 references. (NAL Call No.: DNAL QL391.N4J62).

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Schmitt, D.P. Duncan, H.E.; Bailey, J.E.; Barker, K.R. Raleigh, N.C. : The Service. AG - North Carolina Agricultural Extension Service, North Carolina State University. Jan 1988. (394). 5 p. ill. (NAL Call No.: DNAL S544.3.N6N62).

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JONEB. Riggs, R.D. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Apr 1987. v. 19 (2). p. 251-254. Includes references. (NAL Call No.: DNAL QL391.N4J62).

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JONEB. Appel, J.A. Lewis, S.A. Raleigh, N.C. : Society of Nematologists. Journal of nematology. Oct 1984. v. 16 (4). p. 349-355. Includes 15 references. (NAL Call No.: DNAL QL391.N4J62).

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Schmitt, D.P. Barker, K.R. Raleigh, N.C. : The Service. AG - North Carolina Agricultural Extension Service, North Carolina State University. Dec 1985. (225,rev.). 8 p. ill. Includes references. (NAL Call No.: DNAL S544.3.N6N62).

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develop naturally in field screening nurseries. Thirty-seven random F 4:6 lines from the cross 'Hutton' (susceptible) X 'Tracy M' (resistant) were evaluated for their reaction to Dpc in the field (two locations, 2 yr) under natural infestation and infection conditions, and in the greenhouse (three experiments) with artificial inoculation using infested toothpicks. Our objectives were to compare field and greenhouse screening and to determine the usefulness of greenhouse inoculation in predicting the yield and disease reaction of breeding lines when these lines were subjected to natural field infection conditions. Field screening based on symptoms yield was highly effective in identifying resistant genotypes. Heritabilities for yield and disease ratings in the field were 87 and 92%, respectively. The toothpick inoculation procedure used in the greenhouse was effective with each of three Dpc isolates (different in geographic origin from the field location) in identifying the genotypes that showed highest levels of disease resistance in the field. Phenotypic correlations between greenhouse ratings and yield in the infested field ranged from -0.71 to -0.61. Results indicated that selection based on greenhouse screening can be an effective alternative to field screening when resistance is derived from Tracy M. Crop science. July/Aug 1988. v. 28 (4). p. 626-630. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PHYTAJ. Hewings, A.D. Damsteegt, V.D.; Tolin, S.A. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Aug 1986. v. 76 (8). p. 759-763. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Relationships between Aulacorthum solani and soybean dwarf virus: effect of temperature on transmission.
PHYTAJ. Damsteegt, V.D. Hewings, A.D. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Mar 1987. v. 77 (3). p. 515-518. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Transmission of bean pod mottle virus in soybeans and effects of irregular distribution of infected plants on plant yield.
PHYTAJ. Windham, M.T. Ross, J.P. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Mar 1985. v. 75 (3). p. 310-313. Includes 8 references. (NAL Call No.: DNAL°464.8 P56).

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Breeding soybeans to prevent mineral deficiencies or toxicities.
Chaney, R.L. Boulder, Colo. : Westview Press, 1985. World Soybean Research Conference III : proceedings / edited by Richard Shibles. Literature review. p. 453-459. Includes references. (NAL Call No.: DNAL SB205.S7W6 1984).

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Comparison of aluminon and 8-hydroxyquinoline methods in the presence of fluoride for assaying phytotoxic aluminum.
SSSJD4. Noble, A.D. Sumner, M.E.; Alva, A.K. Madison, Wis. : The Society. A nutrient solution study was conducted to evaluate the effects of varying pH (4.2, 4.5, and 4.8), Al (0, 20, 40, and 80 micron Al) and F- (0, 10, 20, and 40 micron F-) on soybean Glycine max (L.) Merr. cv. Lee root growth. The ability of Al fractions measures by the modified aluminon and 8-hydroxyquinoline methods in predicting the phytotoxic component of Al was also investigated. In the presence of Al up to 40 micron, increasing levels of F- resulted in an increase in root length. Aluminum speciation in solutions predicted by GEOCHEM program showed an increase in concentration of F- complexed Al species with an increase in concentration of F-. A very poor relationship was observed between tap root length and the sum of predicted concentrations of F- complexed Al species. Thus, F- complexed Al species would appear to be less phytotoxic than the other Al monomers. A highly significant correlation was found between tap root length and predicted concentration of Al13+ (R2 = 0.971). The relationship was further improved when sum of predicted concentrations of Al13+ and hydroxy-Al species was considered (R2 = 0.986). Tap root length was poorly correlated with the concentration of monomeric Al determined by the modified aluminon method, which included a larger portion of less phytotoxic F- complexed Al species. In contrast, a highly significant correlation (R2 = 0.984) was found between tap root length and the concentration of labile Al determined by the 8-hydroxyquinoline (15-s reaction) method. The labile Al may include only a very small fraction of F- complexed Al species. Therefore, in solutions containing varying concentrations of F-, Al measured by the 8-hydroxyquinoline (15-s reaction) method is a better predictor of Al phytotoxicity than that measured by the modified aluminon method. Soil Science Society of America journal. July/Aug 1988. v. 52 (4). p. 1059-1063. Includes references. (NAL Call No.: DNAL 56.9 S03).

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Critical nutrient levels related to plant growth and some physiological processes.
JPNUDS. Ohki, K. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 1583-1590. Includes references. (NAL Call No.: DNAL QK867.J67).

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Crop susceptibility factors and stress day index to relate crop response to excessive and deficit soil water.
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Diagnosis of potassium deficiency in soybean.
JPNUDS. Bell, R.W. Brady, D.; Plaskett, D.; Loneragan, J.F. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium", August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 1947-1953. Includes references. (NAL Call No.: DNAL QK867.J67).

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Effective rates of fertilization for correcting manganese deficiency in soybeans.
AGJOAT. Mascagni, H.J. Jr. Cox, F.R. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1985. v. 77 (3). p. 363-366. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Effects of polyacrylamide soil conditioner on the iron status of soybean plants.
SOSCAK. Wallace, A. Wallace, G.A.; Abouzamzam, A.M.; Cha, J.W. Baltimore, Md. : Williams & Wilkins. Soil science. May 1986. v. 141 (5). p. 368-370. Includes references. (NAL Call No.: DNAL 56.8 S03).

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Effects of saline-sodic soil chemistry on soybean mineral composition and stomatal resistance (Nutritional disorders, plant biochemistry).
Coale, F.J. Evangelou, V.P.; Grove, J.H. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1984. v. 13 (4). p. 635-639. ill. Includes references. (NAL Call No.: QH540.J6).

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Effects of soil moisture on soil pCO2, soil solution bicarbonate, and iron chlorosis in soybeans.
SSSJD4. Inskeep, W.P. Bloom, P.R. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1986. v. 50 (4). p. 946-952. Includes references. (NAL Call No.: DNAL 56.9 SO3).

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Evidence for the existence of different uptake mechanisms in soybean and sorghum for iron and manganese.
JPNUDS. Baxter, J.C. Osman, M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Jan 1988. v. 11 (1). p. 51-64. Includes references. (NAL Call No.: DNAL QK867.J67).

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Iron-Deficiency chlorosis of soybean cultivars injured by plant cutoff and defoliation.
CRPSAY. Fehr, W.R. Froehlich, D.M.; Ertl, D.S. Madison, Wis. : Crop Science Society of America. Crop science. Jan 1985. v. 25 (1). p. 21-23. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Iron-stress response mechanism and iron uptake in iron-efficient and -inefficient tomatoes and soybeans treated with cobalt.
JPNUDS. Blaylock, A.D. Jolley, V.D.; Brown, J.C.; Davis, T.D.; Walser, R.H. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. 1985. v. 8 (2). p. 163-176. Includes 29 references. (NAL Call No.: DNAL QK867.J67).

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Peroxide coated seed emergence in water-saturated soil.
AGJOAT. Langan, T.D. Pendleton, J.W.; Oplinger, E.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1986. v. 78 (5). p. 769-772. Includes references. (NAL Call No.: DNAL 4 AM34P).

1445

The pH dependency of aluminum phytotoxicity alleviation by calcium sulfate.
SSSJD4. Noble, A.D. Sumner, M.E.; Alva, A.K. Madison, Wis. : The Society. The alleviation of Al toxicity by CaSO4 is partly due to an increase in formation of less phytotoxic AlSO4+ species. Since ion-pair formation is dependent on the solution pH, the magnitude of alleviation of Al toxicity by CaSO4 may be influenced by pH. In the present study, the alleviation of Al toxicity (80 microM to soybean Glycine max (L.) Merr root growth by CaSO4 (625-10 000 microM was investigated in dilute nutrient solutions at pH 4.2 or 4.8. The concentration of monomeric Al (by a modified aluminon technique) in these solutions ranged from 69.3 to 77.7 microM. An increase in CaSO4 in solution (625-10 000 microM) increased the root length by 3- and 2-fold in solutions at pH 4.2 and 4.8, respectively. The predicted activity of Al3+ decreased while that of AlSO4+ increased with an increase in added CaSO4. The magnitude of alleviation of Al toxicity by CaSO4 was smaller at pH 4.8 than at pH 4.2. This pH dependency is due to lesser formation of AlSO4+ at pH 4.8 than at pH 4.2, together with an increase in formation of Al(OH)2+ at pH 4.8. Root length was poorly correlated with the predicted activity of Al3+ (R2 = 0.346) or sum of the activities of Al3+, hydroxy-Al, and AlSO4+ species (R2 = 0.366). However, the relationship was improved when the sum of the activities of Al3+, Al(OH)2+ and Al(OH)2+ species was considered (R2 = 0.624) and further improved (R2 = 0.841) when the activities of these species were corrected for their respective valence. A good correlation was also found (R2 - 0.88) between root length and calcium aluminum balance; CAB = 2log(aca2+) - 3log(aAl3+) + 2log(aAl(OH)2+) + log (aAL(OH)2+) index. Soil Science Society of America journal. Sept/Oct 1988. v. 52 (5). p. 1398-1402. Includes references. (NAL Call No.: DNAL 56.9 SO3).

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Production of a putative phytosiderophore by soybeans in response to iron deficiency stress.
JPNUDS. Porter, J.R. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Aug 1986. v. 9 (8). p. 1113-1121. Includes 22 references. (NAL Call No.: DNAL QK867.J67).

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Relationships between root length of soybean and calculated activities of aluminum monomers in nutrient solution.
SSSJD4. Alva, A.K. Edwards, D.G.; Asher, C.J.; Blamey, F.P.C. Madison, Wis. : The Society. Soil Science Society of America journal. July/Aug 1986. v. 50 (4). p. 959-962. Includes references. (NAL Call No.: DNAL 56.9 SO3).

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Soil chemical factors associated with soybean chlorosis in calciaquolls of western Minnesota.
AGJOAT. Inskeep, W.P. Bloom, P.R. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1987. v. 79 (5). p. 779-786. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Soybean response to iron-deficiency stress as related to iron supply in the growth medium.
JPNUDS. Jolley, V.D. Brown, J.C. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (6). p. 637-651. Includes references. (NAL Call No.: DNAL QK867.J67).

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Stem cutoff enhances selection for improved iron efficiency of soybean.
CRPSAY. Piper, T.E. Fehr, W.R.; Voss, B.K. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 751-752. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Absorption and translocation of CGA-82725 with additives.
WEESA6. Gillespie, G.R. Skrzypczak, G.A.; Nalewaja, J.D. Champaign, Ill. : Weed Science Society of America. Abstract: The influence of various additives on CGA-82725 2-propanyl-2,4-(3,5-dichloro-2-pyridyloxy)phenoxy propanoate absorption and translocation was determined in oats (Avena sativa L. 'Lyon'). The absorption and translocation of 14C was greater when 14C-CGA-82725 was applied with petroleum oil compared to soybean Glycine max (L.) Merr oil. The translocation of 14C was greater at 96 than 48 h after 14C-CGA-82725 application. The absorption of 14C was greater at 48 than 24 h but was similar at 48 and 96 h after 14C-CGA-82725 application with no additive, petroleum oil, or soybean oil. The absorbed and translocated 14C was greater when 14C-CGA-82725 was applied with oil at 1.2 compared to 0.6 L/ha. No additional increase in14C absorption and translocation was obtained if the oil volume was increased to 2.3 L/ha. The addition of petroleum oil to 14C-CGA-82725 increased 14C absorption and translocation more than the addition of palm (Eleais guineeneis Jalq.), safflower (Carthamus tinctorius L.), linseed (Linum usitatissimum L.), or soybean oil. The four seed oils and the emulsifier. At Plus 300F caused similar increases in 14C absorption and translocation over 14C-CGA-82725 applied alone. Ethylene glycol did not increase 14C absorption and translocation compared to 14C-CGA-82725 applied alone. Weed science. May 1988. v. 36 (3). p. 282-285. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of AC 252 214 in soybean (Glycine max), common cocklebur (Xanthium strumarium), and velvetleaf (Abutilon theophrasti).
WEESA6. Shaner, D.L. Robson, P.A. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 469-471. Includes 4 references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of foliar-applied imazaquin in soybeans (Glycine max), peanuts (Arachis hypogaea), and associated weeds.
WEESA6. Wilcut, J.W. Wehtje, G.R.; Patterson, M.G.; Cole, T.A. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 5-8. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of metribuzin in diploid and tetraploid soybean (Glycine max) plants and cell cultures.
WEESA6. Abusteit, E.O. Corbin, F.T.; Schmitt, D.P.; Burton, J.W.; Worsham, A.D.; Thompson, L. Jr. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 618-628. Includes 26 references. (NAL Call No.: DNAL 79.8 W41).

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Achieving maximum germination potential in germination tests of soybean (Glycine max, prehydratin, imbibition, imbibition injury, seed lots).
Schultz, Q.E. Evenson, P.D. East Lansing, Mich. : Association of Official Seed Analysts. Journal of seed technology. 1983. v. 8 (1). p. 31-40. ill. Includes references. (NAL Call No.: SB113.2.J6).

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Allelopathic effect of parthenium (Parthenium hysterophorus L.) extract and residue on some agronomic crops and weeds.
JCECD. Mersie, W. Singh, M. New York, N.Y. : Plenum Press. Journal of chemical ecology. July 1987. v. 13 (7). p. 1739-1747. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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Alleviation of imbibitional chilling injury by use of lanolin.
CRPSAY. Priestley, D.A. Leopold, A.C. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1252-1254. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Aluminum-inhibited shoot development in soybean: a possible consequence of impaired cytokinin supply.
CSOSA2. Pan, W.L. Hopkins, A.G.; Jackson, W.A. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1143-1153. Includes references. (NAL Call No.: DNAL S590.C63).

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An analysis of physiological and molecular aspects of heat shock gene expression.
Key, J.L. Czarnecka, E.; Gurley, W.B.; Nagao, R.T. New York : Plenum Press, c1987. Tailoring genes for crop improvement : an agricultural perspective / edited by George Bruening ... et al. . p. 101-109. Includes references. (NAL

Call No.: DNAL SB123.57.C66 1986).

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Assessment of crop loss from atmospheric deposition: a case study.
Heck, W.W. Heagle, A.S. Blacksburg, VA : Society of American Foresters, 1986. Atmospheric deposition and forest productivity : proceedings of the Fourth Regional Technical Conference at the Sixty-fifth Annual Meeting of the Appalachian Society of American Foresters, Raleigh, NC, Jan. 29-31, 1986. p. 9-21. Includes references. (NAL Call No.: DNAL SD387.E58A66 1986).

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Auxinlike activity and metabolism of mefluidide in corn (Zea mays) and soybean (Glycine max) tissue.
WEESA6. Glenn, S. Rieck, C.E. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 452-456. Includes 20 references. (NAL Call No.: DNAL 79.8 W41).

1462

Bentazon metabolism in tolerant and susceptible soybean (Glycine max) genotypes.
WEESA6. Connelly, J.A. Johnson, M.D.; Gronwald, J.W.; Wyse, D.L. Champaign, Ill. : Weed Science Society of America. Previous reports have sugessted that bentazon 3-(1-methylethyl)-(1H)-2,1,3-benzothiadiazin--4(3H)-one 2,2-dioxide tolerance among soybean genotypes is the result of differential translocation or metabolism. The basis for tolerance was reexamined using susceptible and tolerant genotypes. Tolerant genotypes ('Hill' and 'Clark 63') were found to tolerate 100- to 300-fold more bentazon than susceptible genotypes ('L78-3263', 'Hurrelbrink', and 'PI229.342'). Minor differences in absorption and translocation occurred among the genotypes but they did not correlate with tolerance. Tolerant genotypes metabolized 80 to 90% of absorbed bentazon within 24 h, while susceptible genotypes metabolized only 10 to 15%. Two major metabolites, theglycosyl conjugates of 6- and 8-hydroxybentazon, were formed in tolerant genotypes. Susceptible genotypes did not form the hydroxybentazon conjugates but instead produced relatively low levels of two unidentified metabolites. It is concluded that differential bentazon tolerance among soybean genotypes is linked to the ability to form both the 6- and 8-hydroxybentazon conjugates. Weed science. July 1988. v. 36 (4). p. 417-423. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Breeding soybeans to prevent mineral deficiencies or toxicities.
Chaney, R.L. Boulder, Colo. : Westview Press, 1985. World Soybean Research Conference III : proceedings / edited by Richard Shibles. Literature review. p. 453-459. Includes references. (NAL Call No.: DNAL SB205.S7W6 1984).

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Calcium and Al interactions and soybean growth in nutrient solutions.
CSOSA2. Noble, A.D. Sumner, M.E. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1119-1131. Includes references. (NAL Call No.: DNAL S590.C63).

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Carryover effect of new soybean herbicides on corn.
Witt, W.W. Mills, J.A.; Schmitz, G.L. Lexington, Ky. : The Department. Soil science news & views - Cooperative Extension Service and University of Kentucky, College of Agriculture, Department of Agronomy. Apr 1988. v. 9 (4). 2 p. (NAL Call No.: DNAL S591.55.K4S64).

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Changes in soybean seed quality from high temperature during seed fill and maturation.
CRPSAY. Keigley, P.J. Mullen, R.E. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1212-1216. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Chemical interactions of acidic precipitation and terrestrial vegetation.
RAPHB. Evans, L.S. New York, N.Y. : Plenum Press. Recent advances in phytochemistry. In the series analytic: Phytochemical effects of environmental compounds / edited by J.A. Saunders, L. Kosak-Channing and E.E. Conn. 1987. v. 21. p. 203-233. Includes references. (NAL Call No.: DNAL QK865.A1R4).

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Chloride and water stress effects on soybean in pot culture.
JPNUDS. Parker, M.B. Gaines, T.P.; Hook, J.E.; Gascho, G.J.; Maw, B.W. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1987. v. 10 (5). p. 517-538. Includes references. (NAL Call No.: DNAL QK867.J67).

1469

Cinmethylin for weed control in soybeans, Glycine max.
WEESA6. Bhowmik, P.C. Champaign, Ill. : Weed Science Society of America. A 3-yr study was conducted to evaluate efficacy and soybean tolerance of cinmethylin. Cinmethylin was applied preemergence alone at 0.6, 0.8, and 1.0 kg ai/ha or in combination with metribuzin at 0.3 kg/ha. These treatments did not injure soybeans in field trials in 1984, 1985, and 1986. The combination of cinmethylin at 0.7 kg/ha and metribuzin at 0.3 kg/ha controlled more than 90% of large crabgrass, fall panicum, and yellow foxtail. Redroot pigweed and common lambsquarters control was also excellent. Residual control of all grass species was excellent for 8 weeks after preemergence application, followed by reduced control in two of the three grasses. The combination of cinmethylin and metribuzin at 0.7 and 0.3 kg/ha, respectively, significantly increased soybean yields compared to those of untreated plots. These yields were comparable with those obtained from the combination of alachlor and metribuzin at 2.0 and 0.3 kg/ha, respectively. Cinmethylin treatments had no adverse effects on soybean yield components including pods/plant, seed/pod, and seed weight. Cinmethylin shows potential as a preemergence herbicide for full-season weed control in soybean production. Weed science. Sept 1988. v. 36 (5). p. 678-682. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Comparative effects of CGA-92194, cyomtrinil, and flurazole on selected metabolic processes of isolated soybean leaf cells.
JPGRDI. Zama, P. Hatzios, K.K. New York, N.Y. : Springer. Journal of plant growth regulation. 1986. v. 5 (2). p. 59-72. Includes references. (NAL Call No.: DNAL QK745.J6).

1471

Contaminant transport in agroecosystems through retention of soil particles on plant surfaces.
JEVQAA. Pinder, J.E. III. McLeod, K.W. Madison, Wis. : American Society of Agronomy. The contamination of plant surfaces with soil particles is a potentially important process in the transport of insoluble contaminants such as radionuclides, heavy metals, and hydrophobic organics in agroecosystems, but few data are available to assess the significance of this mechanism for different crop species. The mass of soil particle retained on the surfaces of corn (Zea mays L.) and sunflower (Helianthus annus L.) grown under field conditions were measured using the 238Pu content of the plants to indicate retention of soil. The crops demonstrated similar quantities and height distributions of soil retained on leaf and stem surfaces. Mean retention was 0.86 g soil retained on corn vegetation per square meter of land surface and 0.79 g m-1 retained on sunflower. Most of the soil was on the lower 1 m of the vegetation. The height distributions of retained soil can explain the larger concentrations of soil observed in the mechanically harvested grains of short stature crops such as wheat (Triticum aestivum L.) (120 mg soil per kg grain) and soybean Glycine max (L.) Merr. (82 mg kg-1) than that observed in taller crops such as corn (2 mg kg-1). The significance of soil retention in determining the accumulation of contaminants in grains is evaluated for several important agricultural crops. Journal of environmental quality. Oct/Dec 1988. v. 17 (4). p. 602-607. Includes references. (NAL Call No.: DNAL QH540.J6).

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Controlling seed weathering in the field.
Potts, H.C. Mississippi State, Miss. : The Station. MAFES research highlights - Mississippi Agricultural & Forestry Experiment Station. Mar 1985. v. 48 (3). p. 8. (NAL Call No.: DNAL 100 M69MI).

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Critical nutrient levels related to plant growth and some physiological processes.
JPNUDS. Ohki, K. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 1583-1590. Includes references. (NAL Call No.: DNAL QK867.J67).

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Cut-off, break-over, and defoliation effects on a determinate soybean cultivar.
AGJOAT. Malone, S.R. Caviness, C.E. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Aug 1985. v. 77 (4). p. 585-588. Includes 7 references. (NAL Call No.: DNAL 4 AM34P).

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Dicamba absorption and translocation as influenced by formulation and surfactant.
WEESA6. Petersen, P.J. Haderlie, L.C.; Hoefer, R.H.; McAllister, R.S. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 717-720. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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DNA sequence and transcript mapping of a soybean gene encoding a small heat shock protein.
PNASA. Czarnecka, E. Gurley, W.B.; Nagao, R.T.; Mosquera, L.A.; Key, J.L. Washington, D.C. : The Academy. Proceedings of the National

Academy of Sciences of the United States of America. June 1985. v. 82 (11). p. 3726-3730. ill. Includes 38 references. (NAL Call No.: DNAL 500 N21P).

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Effect of application factors on postemergence phytotoxicity of fluazifop-butyl, haloxyfop-methyl, and sethoxydim (Soybeans, sorghum, Nebraska).
Buhler, D.D. Burnside, O.C. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1984. v. 32 (5). p. 574-583. Includes 26 references. (NAL Call No.: 79.8 W41).

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Effect of application time on soil residue and efficacy of sulfonylureas.
SWSPBE. Foy, C.L. Mersie, W. Raleigh, N.C. : The Society . Proceedings - Southern Weed Science Society. 1986. (39th). p. 446-456. Includes references. (NAL Call No.: DNAL 79.9 S08 (P)).

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Effect of haloxyfop and haloxyfop-methyl on elongation and respiration of corn (Zea mays) and soybean (Glycine max) roots.
WEESA6. Gronwald, J.W. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1986. v. 34 (2). p. 196-202. ill. Includes 22 references. (NAL Call No.: DNAL 79.8 W41).

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The effect of injury simulating hail damage to soybeans /by R.R. Kalton, C.R. Weber and J.C. Eldredge.
Kalton, Robert Rankin, 1920-. Weber, Charles R.; Eldredge, John C._1886-. Ames, Iowa : Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, 1949. p. 736-796 : ill. ; 23 cm. Bibliography: p. 796. (NAL Call No.: DNAL 100 Io9 no.359).

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Influence of soybean oil carrier and method of application on weed control in soybeans (Glycine max).
WEESA6. Banks, V.E. Oliver, L.R.; McClelland, M. Champaign, Ill. : Weed Science Society of America. Acifluorfen (5- 2-chloro-4-(trifluoromethyl)phenoxy -2-nitrobenzoic acid) and bentazon 3-(1-methylethyl-(1H)-2,1,3-benzothiadiazin-4-(3H)-one 2,2-dioxide plus acifluorfen were applied through hydraulic flat-fan nozzles or controlled-droplet applicators (CDA) in water plus surfactant, soybean Glycine max (L.) Merr. oil and water emulsions, and soybean oil alone. Except for inadequate weed control with CDA applications at 7 L/ha, method of application did not affect weed control of common cocklebur (Xanthium strumarium L. ~

XANST) or smooth pigweed (Amaranthus hybridus L. ~ MACH) at high rates of bentazon plus acifluorfen (560 plus 280 g ai/ha or above). With low rates (280 plus 140 g/ha or less), hydraulic flat-fan nozzles were more effective than CDA applications. Early CDA applications of acifluorfen in an oil carrier at a volume of 9 L/ha were as effective as hydraulic nozzle applications at a carrier volume of 47 L/ha. Later applications resulted in inadequate weed control. Increasing soybean oil concentration from 2.5 to 40% (v/v) in acifluorfen spray mixtures did not significantly increase the phytotoxicity of acifluorfen. Weed science. July 1988. v. 36 (4). p. 504-509. Includes references. (NAL Call No.: DNAL 79.8 W41).

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CRPSAY. Fehr, W.R. Froehlich, D.M.; Ertl, D.S. Madison, Wis. : Crop Science Society of America. Crop science. Jan 1985. v. 25 (1). p. 21-23. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Joint effects of acifluorfen applications and soybean thrips (Sericothrips variabilis) feeding on soybean (Glycine max).
WEESA6. Huckaba, R.M. Coble, H.D.; Van Duyn, J.W. Champaign, Ill. : Weed Science Society of America. Field studies were conducted during 1983 and 1984 to determine the single and interactive effects of trifluralin, soybean thrips, and the sodium salt of acifluorfen on soybean. Increased soybean injury was observed in 1983 when acifluorfen at 0.6 kg ai/ha was applied to soybeans infested with soybean thrips versus plants where soybean thrips were controlled. Soybean injury measured by percent defoliation and visual injury ratings was reduced when thrips were controlled versus soybeans where thrips were not controlled with carbaryl at 0.9 kg ai/ha in 1983. Soybean thrips alone did not reduce soybean seed yield in this study.Acifluorfen reduced soybean photosynthetic rate, shoot weight, oat weight, and seed yield. Trifluralin had no effect on soybean growth parameters measured in this study. Weed science. Sept 1988. v. 36 (5). p. 667-670. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Yeargan, K.V. Boulder, Colo. : Westview Press, 1985. World Soybean Research Conference III : proceedings / edited by Richard Shibles. p. 695-702. Includes references. (NAL Call No.: DNAL SB205.S7W6 1984).

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JEENAI. Hammond, R.B. College Park, Md. : Entomological Society of America. Journal of economic entomology. Oct 1986. v. 79 (5). p. 1338-1342. Includes references. (NAL Call No.: DNAL 421 J822).

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WEESA6. Rubin, B. Casida, J.E. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 462-468. Includes 24 references. (NAL Call No.: DNAL 79.8 W41).

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Recovery of pitted morningglory (Ipomoea lacunosa) and ivyleaf morningglory (Ipomoe hederacea) following applications of acifluorfen, fomesafen, lactofen.
WEESA6. Higgins, J.M. Whitwell, T.; Murdock, E.C.; Toler, J.E. Champaign, Ill. : Weed Science Society of America. Abstract: Field experiments were conducted during 1985 and 1986 to determine the response of soybean Glycine max (L.) Merr. 'Coker 156' , pitted morningglory (Ipomoea lacunosa L. ~ IPOLA), and ivyleaf morningglory Ipomoea hederacea (L.) Jacq. ~ POHE to acifluorfen (5- 2-chloro-4-(trifluoromethyl)phenoxy -2-nitrobenzoic acid), fomesafen (5- 2-chloro-4-(trifluoromethyl)phenoxy -N-(methylsul-fonyl)-2-nitrobenzamide), and lactofen (+/-) -2-ethoxy-1-methy-2-oxoethyl-5- 2-chloro-4-(trifluromethyl)phenoxy -2-dinitrobenzoate-). Acifluorfen and lactofen were more phytotoxic to soybean 15 days after treatment (DAT) than fomesafen. All herbicides at low rates controlled 80% or more pitted morningglory. However, only the high rates (0.6 kg ai/ha) of acifluoren and fomesafen controlled 80% or more ivyleaf morningglory 90 DAT. Full-season competition from untreated pitted morningglory reduced soybean seed yields 44 and 22% in 1985 and 1986, respectively, compared to 58 and 49% with untreated ivyleaf morningglory. Soybean seed yields were higher in plots receiving acifluorofen or fomesafen applications than lactofen applications. Weed science. May 1988. v. 36 (3). p. 345-353. Includes references. (NAL Call No.: DNAL 79.8

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Hall, R. Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension, Plant Science Department. July 16, 1987. v. 2 (15). p. 3-4. (NAL Call No.: DNAL S596.7.F44).

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Pomeranke, G.J. Nickell, C.D.; Wax, L. Ames, Iowa : The Service. Soybean genetics newsletter - United States, Agricultural Research Service. Apr 1987. v. 14. p. 240-243. Includes references. (NAL Call No.: DNAL aSB205.S7S6).

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Response of soybean to low concentrations of ozone. II. Effects on growth, biomass allocation, and flowering.
JEVQAA. Amundson, R.G. Raba, R.M.; Schoettle, A.W.; Reich, P.B. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1986. v. 15 (2). p. 161-167. Includes references. (NAL Call No.: DNAL QH540.J6).

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Response of soybean to low concentrations of ozones. I. Reductions in leaf and whole plant net photosynthesis and leaf chlorophyll center.
JEVQAA. Reich, P.B. Schoettle, A.W.; Raba, R.M.; Amundson, R.G. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Jan/Mar 1986. v. 15 (1). p. 31-36. Includes references. (NAL Call No.: DNAL QH540.J6).

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Responses of soybean (Glycine max) and three C4 grass weeds to CO2 enrichment during drought.
WEESA6. Patterson, D.T. Champaign, Ill. : Weed Science Society of America. Weed science. Mar 1986. v. 34 (2). p. 203-210. Includes 29 references. (NAL Call No.: DNAL 79.8 W41).

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Salinity tolerance of winged bean as compared to that of soybean.
AGJOAT. Weil, R.R. Khalil, N.A. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1986. v. 78 (1). p. 67-70. Includes 16 references. (NAL Call No.: DNAL 4 AM34P).

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Simulation of dehydration injury to membranes from soybean axes by free radicals.
PLPHA. Senaratna, T. McKersie, B.D.; Stinson, R.H. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1985. v. 77 (2). p. 472-474. ill. Includes 20 references. (NAL Call No.: DNAL 450 P692).

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Parker, M.B. Gaines, T.P.; Gascho, G.J. S.l. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1984. v. 43. p. 2-5. Includes 6 references. (NAL Call No.: DNAL 56.9 S032).

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Combinations of nonselective herbicides for difficult to control weeds in no-till corn, Zea mays, and soybeans, Glycine max.
WEESA6. Wilson, J.S. Worsham, A.D. Champaign, Ill. : Weed Science Society of America. The combination of glyphosate and 2,4-D at various rates was evaluated for controlling existing weeds at planting in no-till corn and soybeans. Herbicide combinations in soybeans also included paraquat plus 2,4-D linuron, or diuron. Standard treatments included glyphosate (0.6 and 1.1 kg ae/ha) and paraquat (0.3 and 0.6 kg ai/ha), and 2,4-D (0.6 kg ae/ha) alone. For corn, the addition of 2,4-D to glyphosate did not improve weed control, although the addition of 2,4-D to paraquat did improve horseweed control. Corn yield with the herbicide combinations was higher than that for the nonselective herbicides alone. Although initial weed control was good in soybeans, weed regrowth in all paraquat alone treatments was substantial, especially with horseweed. The addition of 2,4-D to paraquat improved control of horseweed and tall morningglory. The addition of linuron or diuron to paraquat improved horseweed and common ragweed control, whereas the addition of 2,4-D to glyphosate improved the control of tall morningglory but not the other weed species. Generally, after 4 weeks, all glyphosate treatments provided better horseweed control than all paraquat treatments. Paraquat plus either linuron or diuron and glyphosate alone us in combination with 2,4-D gave the highest soybean yields. Weed science. Sept 1988. v. 36 (5). p. 648-652. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Barker, M.A. Thompson, L. Jr.; Godley, F.M. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1984. v. 32 (6). p. 813-818. Includes 13 references. (NAL Call No.: DNAL 79.8 W41).

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Influence of soybean oil carrier and method of application on weed control in soybeans (Glycine max).
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and 50 cm of common cocklebur, respectively. Johnsongrass, sicklepod, and tall morningglory grew more slowly than the other weeds and no measurable competitve effects on soybean biomass. Soybean competition reduced biomass of all weeds 90 to 97%. Soybean cultivar influenced the level and duration of competitiveness depending on the weed species present. Biomass of both soybean cultivars was reduced when they were growing within 50 cm of Palmer amaranth. Soybean seed yield was reduced when soybeans were growing within 25 cm of common cocklebur and Palmer amaranth and also when they were growing within 12.5 cm of tall morningglory. Sicklepod had no effect on soybean seed yield. Weed science. Nov 1988. v. 36 (6). p. 770-774. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Nester, P.R. Harger, T.R.; Geaghan, J.P. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1984. v. 32 (6). p. 807-812. ill. Includes 7 references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Defelice, M.S. Witt, W.W.; Martin, J.R. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1987. v. 35 (1). p. 108-114. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Langemeier, M.A. Witt, W.W. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1986. v. 34 (5). p. 751-755. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Whitwell, T. Wehtje, G.; Walker, R.H.; McGuire, J.A. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 673-678. Includes 17 references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Regnier, E.E. Salvucci, M.E.; Stoller, E.W. Champaign, Ill. : Weed Science Society of America. Photosynthesis and growth responses to irradiance level during growth were compared in soybean (Glycine max L. Merr. 'Century') and three broadleaf weeds to determine if these responses were associated with differences in shade tolerance among species. In response to reduced irradiance during growth, leaf thickness of all species decreased, while chlorophyll content per unit leaf volume and photosynthetic rate per unit leaf volume, measured at low irradiance, increased. Soybean and common cocklebur (Xanthium strumarium L. ~ XANST) also exhibited a decrease in soluble proteins on a leaf volume basis under reduced irradiance, and common cocklebur further exhibited a decrease in ribulose-1, 5-bisphosphate carboxylase (RuBPcase) protein per unit leaf volume. Decreased irradiance during growth did not alter the content of RuBPcase or other soluble proteins per unit leaf volume in jimsonweed (Datura stramonium L. ~ DATST) or velvetleaf (Abutilon theophrasti Medic. ~ ABUTH). The superior shade tolerance of common cocklebur compared to the other species was attributed in part to the levels of RuBPcase and other photosynthetic proteins in leaves developed at low irradiance. Weed science. July 1988. v. 36 (4). p. 487-496. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Recovery of pitted morningglory (Ipomoea lacunosa) and ivyleaf morningglory (Ipomoe hederacea) following applications of acifluorfen, fomesafen, lactofen.
WEESA6. Higgins, J.M. Whitwell, T.; Murdock, E.C.; Toler, J.E. Champaign, Ill. : Weed Science Society of America. Abstract: Field experiments were conducted during 1985 and 1986 to determine the response of soybean Glycine max (L.) Merr. 'Coker 156' , pitted morningglory (Ipomoea lacunosa L. ~ IPOLA), and ivyleaf morningglory Ipomoea hederacea (L.) Jacq. ~ POHE to acifluorfen (5- 2-chloro-4-(trifluoromethyl)phenoxy -2-nitrobenzoic acid), fomesafen (5- 2-chloro-4-(trifluoromethyl)phenoxy -N-(methylsul-fonyl)-2-nitrobenzamide), and lactofen (+/-) -2-ethoxy-1-methy-2-oxoethyl-5- 2-chloro-4-(trifluromethyl)phenoxy -2-dinitrobenzoate-). Acifluorfen and lactofen were more phytotoxic to soybean 15 days after treatment (DAT) than fomesafen. All herbicides at low rates controlled 80% or more pitted morningglory. However, only the high rates (0.6 kg ai/ha) of acifluoren and fomesafen controlled 80% or more ivyleaf morningglory 90 DAT. Full-season competition from untreated pitted morningglory reduced soybean seed yields 44 and 22% in 1985 and 1986, respectively, compared to 58 and 49% with untreated ivyleaf morningglory. Soybean seed yields were higher in plots receiving acifluorofen or fomesafen applications than lactofen applications. Weed science. May 1988. v. 36 (3). p. 345-353. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Yee, D. Weinberger, P.; Khan, S.U. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1985. v. 33 (6). p. 882-887. ill. Includes 29 references. (NAL Call No.: DNAL 79.8 W41).

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RRMSD. Shaw, D.R. Mississippi State, Miss. : The Station. Research report - Mississippi Agricultural and Forestry Experiment Station. July 1987. v. 12 (20). 4 p. Includes references. (NAL Call No.: DNAL S79.E37).

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Kantack, B. Brookings, S.D. : The Department. Field facts : soils, insects, diseases, weeds, crops - South Dakota State University, Cooperative Extension Service, Plant Science Department. July 13, 1988. p. 2. (NAL Call No.: DNAL S596.7.F44).

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Wilson, H.P. Virginia Beach, Va. : Virginia Polytechnic Inst. and State University Cooperative Ext. Service. The Vegetable growers news. May/June 1984. v. 38 (6). p. 1. (NAL Call No.: 275.28 V52).

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SWSPB. Dale, J.E. Champaign : The Society. Proceedings - Southern Weed Science Society. Includes abstract. Jan 17-19, 1984. (37th). p. 394. (NAL Call No.: DNAL 79.9 S08).

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Weed control in soybeans with SD 95481.
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Weed population changes in no-till soybeans.
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Weed seed populations in ridge and conventional tillage.
WEESA6. Forcella, F. Lindstrom, M.J. Champaign, Ill. : Weed Science Society of America. Weed seed and seedling populations, and weed competition were compared in plots of continuous corn and corn/soybean rotation under ridge and conventional tillage. After 7 to 8 yr of standard chemical and mechanical weed control, from 1500 to 3000 weed seeds/m2 (to a 10-cm depth) were found in continuous corn with ridge tillage whereas about two-thirds fewer seeds were found in conventionally tilled corn. Soil from a corn/soybean rotation had from 200 to 700 seeds/m2 in both tillage systems. Annual loss of weed seeds from the soil through germination was from 3 to 12% in ridge tillage and 11 to 43% in conventional tillage. Additions to the seed pool were supplied by small weeds whose germination was stimulated by "layby" cultivation, with up to 10 times more emergence and 140 times more seed production in ridge than in conventional tillage. Withholding herbicides for 1 yr reduced yields of continuous corn by 10 to 27% in ridge tillage, only 2 to 4% in conventional tillage, and negligibly in corn/soybean rotations regardless of tillage. Reducing seed production of small layby weeds in ridge tillage may aid in solving the weed problem in this conservation tillage system. Nomenclature: Corn, Zea mays L.; soybean, Glycine max (L.) Merr. Weed science. July 1988. v. 36 (4). p. 500-503. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Weed species distribution as influenced by tillage and herbicides.
WEESA6. Wrucke, M.A. Arnold, W.E. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1985. v. 33 (6). p. 853-856. Includes 10 references. (NAL Call No.: DNAL 79.8 W41).

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SWSPB. Banks, P.A. Champaign : The Society. Proceedings - Southern Weed Science Society. 1987. (40th). p. 35-52. (NAL Call No.: DNAL 79.9 S08).

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Absorption and translocation of CGA-82725 with additives.
WEESA6. Gillespie, G.R. Skrzypczak, G.A.; Nalewaja, J.D. Champaign, Ill. : Weed Science Society of America. Abstract: The influence of various additives on CGA-82725 2-propanyl-2,4-(3,5-dichloro-2-pyridyloxy)phenoxy propanoate absorption and translocation was determined in oats (Avena sativa L. 'Lyon'). The absorption and translocation of 14C was greater when 14C-CGA-82725 was applied with petroleum oil compared to soybean Glycine max (L.) Merr oil. The translocation of 14C was greater at 96 than 48 h after 14C-CGA-82725 application. The absorption of 14C was greater at 48 than 24 h but was similar at 48 and 96 h after 14C-CGA-82725 application with no additive, petroleum oil, or soybean oil. The absorbed and translocated 14C was greater when 14C-CGA-82725 was applied with oil at 1.2 compared to 0.6 L/ha. No additional increase in14C absorption and translocation was obtained if the oil volume was increased to 2.3 L/ha. The addition of petroleum oil to 14C-CGA-82725 increased 14C absorption and translocation more than the addition of palm (Eleais guineeneis Jalq.), safflower (Carthamus tinctorius L.), linseed (Linum usitatissimum L.), or soybean oil. The four seed oils and the emulsifier. At Plus 300F caused similar increases in 14C absorption and translocation over 14C-CGA-82725 applied alone. Ethylene glycol did not increase 14C absorption and translocation compared to 14C-CGA-82725 applied alone. Weed science. May 1988. v. 36 (3). p. 282-285. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of AC 252 214 in soybean (Glycine max), common cocklebur (Xanthium strumarium), and velvetleaf (Abutilon theophrasti).
WEESA6. Shaner, D.L. Robson, P.A. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 469-471. Includes 4 references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of foliar-applied imazaquin in soybeans (Glycine max), peanuts (Arachis hypogaea), and associated weeds.
WEESA6. Wilcut, J.W. Wehtje, G.R.; Patterson, M.G.; Cole, T.A. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 5-8. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Absorption, translocation, and metabolism of metribuzin in diploid and tetraploid soybean (Glycine max) plants and cell cultures.
WEESA6. Abusteit, E.O. Corbin, F.T.; Schmitt, D.P.; Burton, J.W.; Worsham, A.D.; Thompson, L. Jr. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 618-628. Includes 26 references. (NAL Call No.: DNAL 79.8 W41).

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Acifluorfen-induced isoflavonoids and enzymes of their biosynthesis in mature soybean leaves. Whole leaf and mesophyll responses.
PLPHA. Cosio, E.G. Weissenbock, G.; McClure, J.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1985. v. 78 (1). p. 14-19. Includes 28 references. (NAL Call No.: DNAL 450 P692).

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Agricultural pests as common property: control of the corn rootworm.
Lazarus, W.F. Dixon, B.L. Ames, Iowa : American Agricultural Economics Association. Extract: Insecticide resistance is an increasingly widespread problem reducing effectiveness and necessitating a switch to more expensive controls. A common property resource model is used to describe potential gain from internalizing resistance externalities through regional coordination. A nonlinear programming model of an Illinois cash grain farm is used to estimate the gain for corn rootworm control where rotation to soybeans is an alternative to insecticide. Switching to rotation as resistance builds causes a relatively minor decrease in profits because soybeans are profitable. Gain from delaying resistance is slight. Co-states give price changes necessary to alter externality production. American journal of agricultural economics. Includes statistical data. Nov 1984. v. 66 (4). p. 456-465. Includes 10 references. (NAL Call No.: DNAL 280.8 J822).

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Analysis for nonextractable (bound) residues of pentachlorophenol in plant cells using a cell wall fractionation procedure.
EESAD. Langebartels, C. Harms, H. Orlando, Fla. : Academic Press. Ecotoxicology and environmental safety. Oct 1985. v. 10 (2). p. 268-279. Includes references. (NAL Call No.: DNAL QH545.A1E29).

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Analysis of the herbicide diuron in crops.
JAFCAU. Zahnow, E.W. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. May/June 1987. v. 35 (3). p. 403-406. Includes references. (NAL Call No.: DNAL 381 J8223).

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Application of bentazon and sethoxydim in soybean oil with rotary atomizers.
AGJOAT. Cantwell, J.R. Kapusta, G. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1986. v. 78 (3). p. 478-482. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Auxinlike activity and metabolism of mefluidide in corn (Zea mays) and soybean (Glycine max) tissue.
WEESA6. Glenn, S. Rieck, C.E. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 452-456. Includes 20 references. (NAL Call No.: DNAL 79.8 W41).

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Bentazon metabolism in tolerant and susceptible soybean (Glycine max) genotypes.
WEESA6. Connelly, J.A. Johnson, M.D.; Gronwald, J.W.; Wyse, D.L. Champaign, Ill. : Weed Science Society of America. Previous reports have sugessted that bentazon 3-(1-methylethyl)-(1H)-2,1,3-benzothiadiazin--4(3H)-one 2,2-dioxide tolerance among soybean genotypes is the result of differential translocation or metabolism. The basis for tolerance was reexamined using susceptible and tolerant genotypes. Tolerant genotypes ('Hill' and 'Clark 63') were found to tolerate 100- to 300-fold more bentazon than susceptible genotypes ('L78-3263', 'Hurrelbrink', and 'PI229.342'). Minor differences in absorption and translocation occurred among the genotypes but they did not correlate with tolerance. Tolerant genotypes metabolized 80 to 90% of absorbed bentazon within 24 h, while susceptible genotypes metabolized only 10 to 15%. Two major metabolites, theglycosyl conjugates of 6- and 8-hydroxybentazon, were formed in tolerant genotypes. Susceptible genotypes did not form the hydroxybentazon conjugates but instead produced relatively low levels of two unidentified metabolites. It is concluded that differential bentazon tolerance among soybean genotypes is linked to the ability to form both the 6- and 8-hydroxybentazon conjugates. Weed science. July 1988. v. 36 (4). p. 417-423. Includes references. (NAL Call No.: DNAL 79.8 W41).

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A bioeconomic simulation approach to multi-species insect management.
Boggess, W.G. Cardelli, D.J.; Barfield, C.S. Experiment, Ga. : The Association. Extract: Classical approaches to the economics of pest management have focused almost exclusively on single-species models. This study develops and implements a methodology with which to evaluate multi-species, non-stochastic, managerial decisions subject to stochastic elements of the plant-insect system. Multi-species insect management strategies (combinations of scouting interval, threshold value, and choice of pesticide) are analyzed using a physiological mechanistic soybean plant growth model coupled to three insect population dynamics models. Preliminary results indicate that net returns are maximized and variance is reduced with lower tresholds and more frequent scouting than current recommendations. Southern journal of agricultural economics - Southern Agricultural Economics Association. Dec 1985. v. 17 (2). p. 43-55. Includes 24 references. (NAL Call No.: DNAL AGE HD101.S6).

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Cinmethylin for weed control in soybeans, Glycine max.
WEESA6. Bhowmik, P.C. Champaign, Ill. : Weed Science Society of America. A 3-yr study was conducted to evaluate efficacy and soybean tolerance of cinmethylin. Cinmethylin was applied preemergence alone at 0.6, 0.8, and 1.0 kg ai/ha or in combination with metribuzin at 0.3 kg/ha. These treatments did not injure soybeans in field trials in 1984, 1985, and 1986. The combination of cinmethylin at 0.7 kg/ha and metribuzin at 0.3 kg/ha controlled more than 90% of large crabgrass, fall panicum, and yellow foxtail. Redroot pigweed and common lambsquarters control was also excellent. Residual control of all grass species was excellent for 8 weeks after preemergence application, followed by reduced control in two of the three grasses. The combination of cinmethylin and metribuzin at 0.7 and 0.3 kg/ha, respectively, significantly increased soybean yields compared to those of untreated plots. These yields were comparable with those obtained from the combination of alachlor and metribuzin at 2.0 and 0.3 kg/ha, respectively. Cinmethylin treatments had no adverse effects on soybean yield components including pods/plant, seed/pod, and seed weight. Cinmethylin shows potential as a preemergence herbicide for full-season weed control in soybean production. Weed science. Sept 1988. v. 36 (5). p. 678-682. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Deposits and persistence of permethrin ULV and EC applications on soybean leaves.
JEENAI. Southwick, L.M. Boethel, D.J.; Willis, G.H.; Rester, D.C.; Yanes, J. Jr.; Troxclair, N.N. Jr.; Sparks, A.N. Jr. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1986. v. 79 (1). p. 202-207. Includes references. (NAL Call No.: DNAL 421 J822).

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Desorption of atrazine and cyanazine from soil.
JEVQAA. Clay, S.A. Allmaras, R.R.; Koskinen, W.C.; Wyse, D.L. Madison, Wis. : American Society of Agronomy. Removal of soluble soil organic carbon (SSOC) during herbicide desorption studies using the batch equilibration method may affect the herbicide-soil-solution equilibrium particularly if herbicide-SSOC complexes can form. Desorption characteristics of atrazine (2-chloro-4-ethylamino-6-isopropylamino-s-triazine) and cyanazine (2- 4-chloro-6-(ethylamino)-s-(triazine-2-ylamino)-2-methylpropionitrile were determined in a Ves clay loam (Aquic Hapludolls). For adsorption, the soil was equilibrated with 0.01 M CaCl2 solutions containing atrazine or cyanazine. Desorption with 0.01 M CaCl2 each day for 5 d resulted in hysteresis when compared to the adsorption isotherm. Replacement of the equilibration solution with soil extract for 5 d, while maintaining a higher SSOC content in the desorption equilibration solution than did the CaCl2 solution, did not change desorption isotherm equations. The SSOC-herbicide complexes were not detected in any of the adsorption and desorption equilibration solutions by ultrafiltration (membranes with molecular mass cut offs of 10 000 and 500 daltons), HPLC, or TLC techniques. Either s-triazine-SSOC complexes were not formed in sufficient quantities or they were not stable enough to affect desorption of the ?herbicide during batch equilibration. Journal of environmental quality. Oct/Dec 1988. v. 17 (4). p. 719-723. Includes references. (NAL Call No.: DNAL QH540.J6).

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Dicamba absorption and translocation as influenced by formulation and surfactant.
WEESA6. Petersen, P.J. Haderlie, L.C.; Hoefer, R.H.; McAllister, R.S. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 717-720. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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Double-cropping wheat and soybeans in the Southeast: input use and patterns of adoption.
Marra, M.C. Carlson, G.A. Washington, D.C. : The Department. Extract: Southeastern farmers have increased their double-cropped wheat and soybean acreage by nearly half since 1970. Double-cropping, the raising of two crops per year in the same field, helps raise producer revenues and reduce total input use, since it encourages conservation tillage by farmers. But double-cropping seems to make soybean yields more variable and has helped to quadruple stockpiles of surplus soft red winter wheat since 1970. This report gives State data for double-cropping and examines the factors that caused the year-to-year expansions and contractions in double-cropped acres since the seventies. Agricultural economic report - United States Dept. of Agriculture. June 1986. (552). 18 p. maps. Includes 22 references. (NAL Call No.: DNAL AGE A281.9 AG8A).

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Ecological impact of parathion in soybeans (Norman L. Marston and Michael K. Hennessey).
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Economic impact of the cancellation of the use of trifluralin on soybeans: a comparison of elected estimation models.
Swanson, E.R. Grube, A.H. West Lafayette, Ind. : Purdue University. North Central journal of agricultural economics. Jan 1986. v. 8 (1). p. 143-153. Includes 18 references. (NAL Call No.: DNAL HD1773.A3N6).

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Effect of application time on soil residue and efficacy of sulfonylureas.
SWSPBE. Foy, C.L. Mersie, W. Raleigh, N.C. : The Society . Proceedings - Southern Weed Science Society. 1986. (39th). p. 446-456. Includes references. (NAL Call No.: DNAL 79.9 S08 (P)).

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Effect of fungicide application on soybean-rhizobia symbiosis and isolation of fungicide-resistant strains of Rhizobia japonicum.
BECTA. Tesfai, K. Mallik, M.A.B. New York, N.Y. : Springer-Verlag. Bulletin of environmental contamination and toxicology. June 1986. v. 36

(6). p. 819-826. Includes references. (NAL Call No.: DNAL RA1270.P35A1).

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Effect of glyphosate on indole-3-acetic acid metabolism in tolerant and susceptible plants.
JPGRDI. Lee, T.T. Dumas, T. New York, N.Y. : Springer. Journal of plant growth regulation. 1985. v. 4 (1). p. 29-39. ill. Includes references. (NAL Call No.: DNAL QK745.J6).

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Effect of postemergence herbicides on nodulation and nitrogen fixation in soybeans (Glycine max).
AAREEZ. Ozair, C.A. Moshier, L.J. New York, N.Y. : Springer. Applied agricultural research. 1988. v. 3 (4). p. 214-219. Includes references. (NAL Call No.: DNAL S539.5.A77).

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Effect of trifluralin soil metabolites on soybean (Glycine max) growth and yield.
WEESA6. Koskinen, W.C. Oliver, J.E.; McWhorter, C.G.; Kearney, P.C. Champaign, Ill. : Weed Science Society of America. Weed science. May 1986. v. 34 (3). p. 471-473. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Effects of glyphosate on uptake, translocation, and intracellular localization of metal cations in soybean (Glycine max) seedlings.
PCBPB. Duke, S.O. Vaughn, K.C.; Wauchope, R.D. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. Dec 1985. v. 24 (3). p. 384-394. ill. Includes references. (NAL Call No.: DNAL SB951.P49).

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Effects of herbicides on the survival of Rhizobium japonicum strains.
WEESA6. Moorman, T.B. Champaign, Ill. : Weed Science Society of America. Weed science. July 1986. v. 34 (4). p. 628-633. Includes 23 references. (NAL Call No.: DNAL 79.8 W41).

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Effects of insecticide, weed-free period, and row spacing on soybean (Glycine max) and sicklepod (Cassia obtusifolia) growth (Integrated pest management, Alabama, Georgia).
Walker, R.H. Patterson, M.G.; Hauser, E.; Isenhour, D.J.; Todd, J.W.; Buchanan, G.A. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1984. v. 32 (5). p. 702-706. Includes 16 references. (NAL Call No.: 79.8 W41).

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The effects of selected rice and soybean pesticides on the eggs of Psorophora columbiae.
Klass, M.C. Olson, J.K. Fresno, Calif. : The Association. Journal of the american mosquito control association. Dec 1985. v. 1 (4). p. 458-462. Includes references. (NAL Call No.: DNAL QL536.J686).

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Effects of seven herbicides on N2 (C2H2) fixation by soybeans.
WEESA6. Bollich, P.K. Dunigan, E.P.; Jadi, A.W.M. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 427-430. Includes 8 references. (NAL Call No.: DNAL 79.8 W41).

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Effects of soybean row spacing on spray penetration and efficacy of insecticides applied with aerial and ground equipment.
EVETEX. Hutchins, S.H. Pitre, H.N. College Park, Md. : Entomological Society of America. Environmental entomology. Aug 1984. v. 13 (4). p. 948-953. Includes references. (NAL Call No.: DNAL QL461.E532).

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Efficacy of triapenthenol as a safener against metribuzin injury in soybean (Glycine max) cultivars.
JPGRDI. Vavrina, C.S. Phatak, S.C. New York, N.Y. : Springer. Journal of plant growth regulation. 1988. v. 7 (2). p. 67-75. Includes references. (NAL Call No.: DNAL QK745.J6).

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Enhanced herbicide biodegradation in South Carolina soils previously treated with butylate.
WEESA6. Skipper, H.D. Murdock, E.C.; Gooden, D.T.; Zublena, J.P.; Amakiri, M.A. Champaign, Ill. : Weed Science Society of America. Weed science. July 1986. v. 34 (4). p. 558-563. Includes 33 references. (NAL Call No.: DNAL 79.8 W41).

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Evaluation of chlorsulfuron in wheat (Triticum aestivum) and in a wheat-soybean (Glycine max) double-cropping system.
WEESA6. Khodayari, K. Frans, R.E.; Akkari, K.H. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1985. v. 33 (5). p. 746-749. Includes 12 references. (NAL Call No.: DNAL 79.8 W41).

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Evaluation of herbicides for soybeans on central Florida organic soils /W.T. Scudder.
Scudder, W. T. Gainesville, Fla. : University of Florida Agricultural Experiment Station, 1963. Cover title. 36 p. : ill. ; 23 cm. Biblography: p. 24. (NAL Call No.: DNAL 100 F66S (1) no.650).

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Evaluation of various pest-management characteristics.
Smith, G.S. Wetzstein, M.E.; Douce, G.K. Experiment, Ga. : The Association. Southern journal of agricultural economics - Southern Agricultural Economics Association. Dec 1987. v. 19 (2). p. 93-101. Includes references. (NAL Call No.: DNAL HD101.S6).

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Farm efficiency and insect infestation forecasts the case of soybeans in Illinois /by L. Joe Moffitt ... et al. . --.
Moffitt, L. Joe. Washington, D.C. : Natural Resource Economics Division, Economic Research Service, U.S. Dept. of Agriculture ; Springfield, Va. : Available from NTIS , 1982. "October 1982.". iii, 31 p. : ill. ; 28 cm. --. Bibliography: p. 30-31. (NAL Call No.: DNAL aSB950.2.I3F3).

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United States.~Congress.~House.~Committee on Agriculture.~Subcommittee on Department Operations, Research, and Foreign Agriculture. Washington, D.C. : U.S. G.P.O., 1981 i.e. 1982 . Pt. 1: "June 16, 1981, Data and trade secret issues; July 16, 1981, Safety, health, environmental issues, registration process, effects on international pesticide market; July 22, 1981, Summary testim~ Pt. 2: "June 18, 1981, Washington, D.C., State-federal relations; September 4, 1981, Sacramento Calif., State authority to regulate pesticides."~ "Serial no. 97-R."~ Item 1010-A, 1010-B (microfiche). 3 v. : ill. ; 24 cm. Bibliography: pt. 1, p. 421. (NAL Call No.: DNAL KF27.A33277 1981f).

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Field crop pests: farmers report the severity and intensity.
XAAIA. Suguiyama, L.F. Carlson, G.A. Washington, D.C. : The Department. Abstract: The extent of pesticide use and the prevalence of pest populations on field crops vary according to the pest, crop, region, and survey year. This report estimates the importance of individual pests on selected field crops on a regional and national basis. Surveyed farmers report that the most severe and intense pests were weeds in corn and soybean production, weeds and insects in cotton, and diseases and insects in tobacco. This study relied upon farmers' ability to identify the pest infestations causing economic damage on nine selected field crops. Detailed estimates of the relative importance, severity, and time intensity of target pests are tabulated. Agriculture information bulletin - U.S. Dept. of Agriculture. Includes statistical data. Feb 1985. (487). 52 p. Includes 5 references. (NAL Call No.: DNAL 1 AG84AB).

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WEESA6. Werling, V.L. Buhler, D.D. Champaign, Ill. : Weed Science Society of America. Clomazone at 0.7 kg ai/ha or more, applied early preplant, completely controlled weeds before planting of no-till soybeans. Under low weed density (57 plants/m2 in untreated control) in 1985, grass weed control was nearly complete and not affected by clomazone application time. Late-season broadleaf weed control was less with preemergence application of clomazone at 1.1 or 1.4 kg/ha than with an early preplant or early preplant-preemergence split application of the same clomazone rate. Addition of metribuzin at 0.2 kg ai/ha overcame this control deficiency. Under greater weed densities (330 plants/m2 in untreated control) during 1986 and 1987, early preplant-preemergence split applications gave the greatest control of both grass and broadleaf weeds throughout the growing seasons Preemergence application of clomazone failed to completely control common lambsquarters emerged at the time of application. Early preplant applications failed to maintain redroot pigweed control throughout the season. Differences in soybean yield were attributed to differences in weed control. No significant carryover of clomazone residue was detected through greenhouse or field bioassays. Weed science. Sept 1988. v. 36 (5). p. 629-635. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Influence of soybean oil carrier and method of application on weed control in soybeans (Glycine max).
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hydraulic flat-fan nozzles were more effective than CDA applications. Early CDA applications of acifluorfen in an oil carrier at a volume of 9 L/ha were as effective as hydraulic nozzle applications at a carrier volume of 47 L/ha. Later applications resulted in inadequate weed control. Increasing soybean oil concentration from 2.5 to 40% (v/v) in acifluorfen spray mixtures did not significantly increase the phytotoxicity of acifluorfen. Weed science. July 1988. v. 36 (4). p. 504-509. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Joint effects of acifluorfen applications and soybean thrips (Sericothrips variabilis) feeding on soybean (Glycine max).
WEESA6. Huckaba, R.M. Coble, H.D.; Van Duyn, J.W. Champaign, Ill. : Weed Science Society of America. Field studies were conducted during 1983 and 1984 to determine the single and interactive effects of trifluralin, soybean thrips, and the sodium salt of acifluorfen on soybean. Increased soybean injury was observed in 1983 when acifluorfen at 0.6 kg ai/ha was applied to soybeans infested with soybean thrips versus plants where soybean thrips were controlled. Soybean injury measured by percent defoliation and visual injury ratings was reduced when thrips were controlled versus soybeans where thrips were not controlled with carbaryl at 0.9 kg ai/ha in 1983. Soybean thrips alone did not reduce soybean seed yield in this study.Acifluorfen reduced soybean photosynthetic rate, shoot weight, oat weight, and seed yield. Trifluralin had no effect on soybean growth parameters measured in this study. Weed science. Sept 1988. v. 36 (5). p. 667-670. Includes references. (NAL Call No.: DNAL 79.8 W41).

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WEESA6. Higgins, J.M. Whitwell, T.; Murdock, E.C.; Toler, J.E. Champaign, Ill. : Weed Science Society of America. Abstract: Field experiments were conducted during 1985 and 1986 to determine the response of soybean Glycine max (L.) Merr. 'Coker 156' , pitted morningglory (Ipomoea lacunosa L. ~ IPOLA), and ivyleaf morningglory Ipomoea hederacea (L.) Jacq. ~ POHE to acifluorfen (5- 2-chloro-4-(trifluoromethyl)phenoxy -2-nitrobenzoic acid), fomesafen (5- 2-chloro-4-(trifluoromethyl)phenoxy -N-(methylsul-fonyl)-2-nitrobenzamide), and lactofen (+/-) -2-ethoxy-1-methy-2-oxoethyl-5- 2-chloro-4-(trifluromethyl)phenoxy -2-dinitrobenzoate-). Acifluorfen and lactofen were more phytotoxic to soybean 15 days after treatment (DAT) than fomesafen. All herbicides at low rates controlled 80% or more pitted morningglory. However, only the high rates (0.6 kg ai/ha) of acifluoren and fomesafen controlled 80% or more ivyleaf morningglory 90 DAT. Full-season competition from untreated pitted morningglory reduced soybean seed yields 44 and 22% in 1985 and 1986, respectively, compared to 58 and 49% with untreated ivyleaf morningglory. Soybean seed yields were higher in plots receiving acifluorofen or fomesafen applications than lactofen applications. Weed science. May 1988. v. 36 (3). p. 345-353. Includes references. (NAL Call No.: DNAL 79.8 W41).

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TFHSA. Guy, C.B. Jr. Jeffery, L.S.; Graves, C.R. Knoxville, Tenn. : The Station. Tennessee farm and home science - Tennessee Agricultural Experiment Station. Oct/Dec 1984. (132). p. 9-11. Includes references. (NAL Call No.: DNAL 100 T25F).

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WEESA6. Sterling, T.M. Balke, N.E. Champaign, Ill. : Weed Science Society of America. Metabolism and phytotoxicity of bentazon by suspension-cultured cells of soybean and velvetleaf were compared. Growth of suspension cells of both species was reduced when the cells were exposed to increasing concentrations of bentazon. However, soybean plants were tolerant and velvetleaf giants were susceptible to postemergence applications of bentazon. After incubation with 1 microM 14C-bentazon for 6 h, soybean and velvetleaf cells in the log phase of the culture growth cycle contained similar levels of 14C (6 nmol/g fresh weight). Of the total 14C in the soybean cells, 57 to 92% was present as the glucosyl conjugates of 6-OH- and 8-OH-bentazon with the remainder present as bentazons; the percentage depended on the phase of the culture growth cycle. Bentazon metabolism was greatest in the stationary phase of growth. Thin, transverse sections of soybean hypocotyl metabolized bentazon to the same two metabolites as soybean suspension cells did. The ratio of 6-O-glucosyl-bentazon to 8-O-glucosyl-bentazon was always greater than 1:1 for both the hypocotyl sections and the suspension cells. Bentazon metabolites were not detected in the velvetleaf cells, the velvetleaf hypocotyl sections, or the media of either species. Soybean suspension-cultured cells appear to be a valid and advantageous system for studying the hydroxylation and glucosylation of bentazon the primary reactions believed to be responsible for detoxication of the herbicide in tolerant plants. Weed science. Sept 1988. v. 36 (5). p. 558-565. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Effect of phosphorus, nitrogen fertilization and foliar applied manganese on yield and nutrient concentration of soybean.
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Contaminant transport in agroecosystems through retention of soil particles on plant surfaces.
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The Weibull function as a dose-response model to describe ozone effects on crop yields.
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Potential bans of corn and soybean pesticides: economic implications for farmers and consumers.
Osteen, C. Kuchler, F. Washington, D.C. : The Department. Extract: Removing corn and soybean pesticides with alleged environmental and safety risks from the market could increase U.S. agricultural production costs, crop prices, farm incomes, and consumer expenditures, causing farmers to gain and consumers to lose. Banning all triazines, acetanilides, soil insecticides, or seed treatments would have the largest effects. This report uses an econometric--simulation model, incorporating relatively new developments in welfare economics, to analyze the economic implications of potential bans of corn and soybean insecticides, nematicides, fungicides, and herbicides through cost and yield assessments. Banning an individual corn or soybean pesticide would not significantly affect crop production, but banning all pesticides used for an important pest problem would have substantial effects. This study also demonstrates the interdependence among pesticide regulatory decisions. Agricultural economic report - United States Dept. of Agriculture. Apr 1986. (546). 23 p. Includes 21 references. (NAL Call No.: DNAL AGE A281.9 AG8A).

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